INDIANA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT

OFFICE OF WATER QUALITY

WATERSHED ASSESSMENT AND PLANNING BRANCH

FFY 2011 ANNUAL REPORT TO THE U.S. ENVIRONMENTAL PROTECTION AGENCY

SECTION 319(H) NONPOINT SOURCE GRANT PROGRAM

SEPTEMBER 1, 2011

TABLE OF CONTENTS

OVERVIEW 3

INTRODUCTION 4

WHAT'S THE PROBLEM? 4
THE WATERSHED APPROACH TO ADDRESSING NONPOINT SOURCE POLLUTION 4

STATUS OF INDIANA'S SURFACE WATERS 5

NUTRIENT REDUCTION STRATEGY 6

IDEM'S NONPOINT SOURCE GOALS AND PROGRESS 8

GOAL PROGRESS 9

RESTORATION EFFORTS AND ACHIEVEMENTS 20

SECTION 319(H) & SECTION 205(J) GRANT PROGRAMS 20
Nonpoint Source Program Focus *21*
Pollutant Load Reductions *23*
Project Highlights *24*
PROJECT RECOGNITIONS 31
NONPOINT SOURCE SUCCESS STORY 33

WORKING TO IMPROVE THE NONPOINT SOURCE PROGRAM 36

CONTINUED REORGANIZATION 36
WATER QUALITY MONITORING STRATEGY 37
PROGRAM WEBSITE UPDATE 39
ENHANCING DATABASES 40
DEVELOPMENT AND DEMONSTRATION OF OUTCOMES BASED EVALUATION FRAMEWORK FOR INDIANA NONPOINT SOURCE PROGRAM 41
TOTAL MAXIMUM DAILY LOAD PROGRAM 43
CAPACITY BUILDING TO REDUCE NONPOINT SOURCE POLLUTION 44
LESSONS LEARNED/ADAPTIVE MANAGEMENT 52

PARTNERS IN WATER QUALITY 59

NATURAL RESOURCES CONSERVATION SERVICE 59
INDIANA ASSOCIATION OF SOIL AND WATER CONSERVATION DISTRICTS 60
INDIANA STATE DEPARTMENT OF AGRICULTURE 61
DIVISION OF SOIL CONSERVATION / INDIANA STATE SOIL CONSERVATION BOARD 61
INDIANA DEPARTMENT OF NATURAL RESOURCES, DIVISION OF FISH AND WILDLIFE, LAKE AND RIVER ENHANCEMENT PROGRAM 63
INDIANA STATE REVOLVING FUND LOAN PROGRAM 64
INDIANA UNIVERSITY SCHOOL OF PUBLIC AND ENVIRONMENTAL AFFAIRS, INDIANA CLEAN LAKES PROGRAM 64
INDIANA LAKE MICHIGAN COASTAL PROGRAM 66

APPENDIX A – GEOGRAPHIC LOCATION OF SECTION 319(H) AND 205(J) PROJECTS
APPENDIX B – WATERSHED PLANNING/TMDL ACTIVITIES AND 303(D) LISTED WATERBODIES
APPENDIX C – LIST OF OPEN 319(H) PROJECTS DURING FFY 2011
APPENDIX D – LIST OF OPEN 205(J) PROJECTS DURING FFY 2011

APPENDIX E – PROJECT SUMMARIES FOR CLOSED SECTION 319(H) PROJECTS
APPENDIX F – LIST OF FINAL REPORTS FOR SECTION 319(H) PROJECTS
APPENDIX G – ORGANIZATION CHART FOR THE WATERSHED ASSESSMENT AND PLANNING BRANCH

ATTACHMENT 1 – SUMMARY REPORT ON IDEM'S 319(H) PROGRAM ACCOMPLISHMENTS FOR 2011

OVERVIEW

The Clean Water Act provides U.S. EPA with the authority to grant federal dollars to the states to mitigate and prevent nonpoint source pollution through Sections 205(j) and 319(h). In Indiana, these funds are administered by the Watershed Assessment and Planning Branch of the Indiana Department of Environmental Management's (IDEM) Office of Water Quality. On behalf of the State of Indiana, IDEM is pleased to present this *2011 Nonpoint Source Program Annual Report,* as required by Section 319(h) of the Clean Water Act, to report on Indiana's progress towards reducing nonpoint source pollution. It highlights the state's efforts during the reporting period to collect data and assess water quality, implement projects that reduce or prevent nonpoint source pollution, and educate and involve the public to improve and maintain the quality of water resources for current and future generations of Hoosiers. The report provides an overview of nonpoint source pollution and IDEM's role in leading efforts to address this significant source of water pollution. Information on program goals and achievements is presented, as well as information on how IDEM's Nonpoint Source Program is evolving to become more effective. Additionally, the report presents information on how IDEM's key partners play an important role in the work to address nonpoint source pollution. Lastly, the report provides information on projects funded through Section 319(h) of the Clean Water Act.

IDEM would like to acknowledge the work of our many partners in helping to bring about reductions in nonpoint source pollution. The mitigation and prevention of nonpoint source pollution requires the cooperation of many groups and agencies at the federal, state, and local level, as well as all citizens living in the state. We cannot accomplish the goal of clean water unless we work together.

INTRODUCTION

What's the Problem?

Nonpoint source (NPS) pollution remains the largest source of water quality problems in Indiana. Information from the 2010 draft Indiana Integrated Water Monitoring and Assessment Report shows that nonpoint source pollution is a significant source of impairment in Indiana waterbodies. Bacteria, nutrients, and sediments are the leading nonpoint source pollutants of concern in Indiana. Nonpoint source pollution comes from many diffuse sources across the landscape that are difficult to specifically identify or abate in contrast to point source pollution, which is discharged from a single, identified, and regulated source, such as a pipe. While some nonpoint source pollution is naturally occurring, most of it is a result of human activities.

The Watershed Approach to Addressing Nonpoint Source Pollution

Environmental problems, such as nonpoint source pollution, often cut across media and political jurisdictions. Consequently, environmental mitigation and protection require a comprehensive and collaborative approach that works with a multitude of programs and agencies. The watershed approach provides a framework for coordinating and integrating the myriad programs and resources. This approach directs the focus on water quality in a geographic area delineated by a watershed. A watershed is an area of land that drains to a particular waterway, such as a stream, lake, river, or wetland. By examining water quality issues on a watershed basis, problems can be observed in relationship to their sources so that the causes can be addressed in the most effective manner. The Watershed Approach is based on four basic principles:

1. Geographic focus based on hydrological rather than political boundaries
2. Water quality objectives based on scientific data
3. Coordinated priorities and integrated solutions
4. Diverse, well-integrated partnerships

IDEM's ongoing effort to implement the watershed approach includes:

- Ensuring that internal resources continue to be focused on addressing the most significant water quality issues facing Indiana by conducting a semi-annual review of Office of Water Quality (OWQ) activities and making any necessary adjustments;
- Improving internal coordination between water quality assessment, watershed planning and implementation programs to facilitate an integrated watershed management approach to restoring impaired waterways; and
- Improving coordination with local watershed groups, community groups, and other state and federal agencies to better leverage efforts in ways that will achieve greater improvements in water quality.

STATUS OF INDIANA'S SURFACE WATERS

The Office of Water Quality (OWQ) conducts water quality monitoring and assessments each year to determine statistically the degree to which waters within a given basin support aquatic life, fishing and recreational uses. Waters that do not fully support one or more of their designated beneficial uses are placed on the Indiana's 303(d) List of Impaired Waters.

OWQ conducts water quality monitoring in a different basin each year using a rotating basin approach. From 1996 through 2010, this approach provided water quality data for assessment of approximately one-fifth of the Indiana's surface waters (1-2 basins) each year. Beginning with 2011, monitoring will be conducted in one basin each year resulting in a nine-year rotation. The resources freed up by this extended schedule will be reallocated primarily to nonpoint source monitoring efforts for the purposes of identifying improvements in water quality.

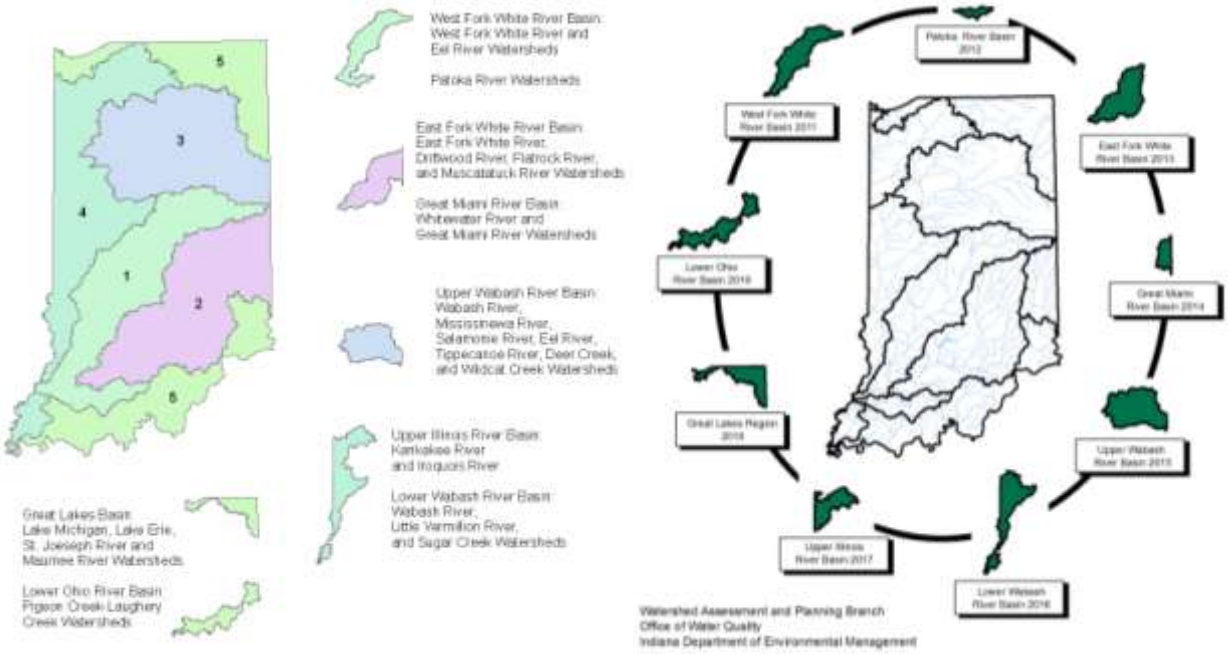
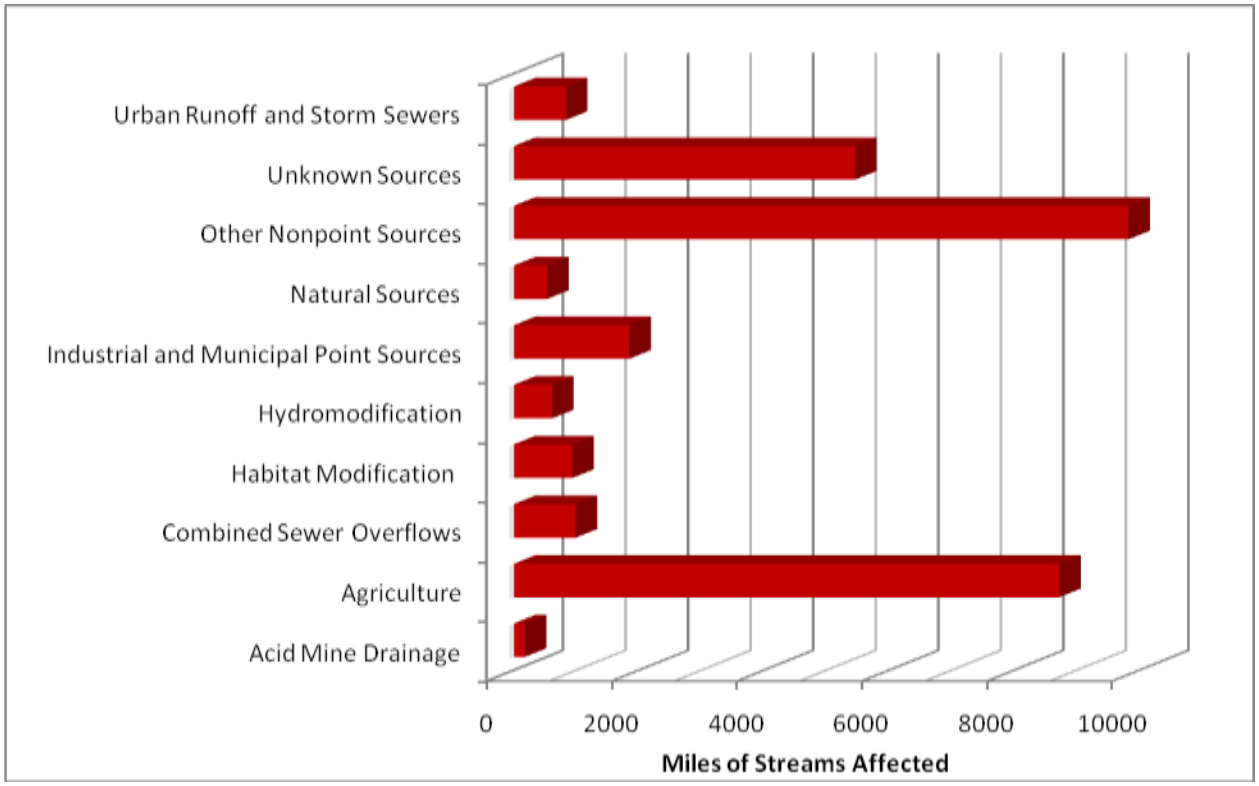


Figure 1: IDEM's 5-year (left) and 9-year (right) rotating basin monitoring and assessment approach.

The results of OWQ's rotating basin assessments are reported in the Integrated Water Monitoring and Assessment Report, which is published by OWQ every two years. According to the 2010 Integrated Water Quality Monitoring and Assessment Report, which was submitted to U.S. EPA in 2010, Indiana has monitored 48.9% of its streams to determine whether they are capable of supporting a well balanced warm water aquatic community. Of the streams monitored, 71.0% were supporting their designated aquatic life use, and 29.0% were found to be impaired. Indiana has monitored 41.8% of its streams for recreational uses. Of the streams monitored, 24.4% support full-body contact recreational uses, while 75.6% were found to be impaired.



Sources of Impairments of Indiana's Streams (2010)

As shown in the chart above, nonpoint sources of water pollution continue to be a primary concern for Indiana's water quality programs and drive the many partner agencies' conservation programs geared towards improving water quality. Data for this chart comes from IDEM's analysis of water monitoring data collected in support of the development of the 303(d) list of impaired waters.

Many of the problems caused by point source pollution have been addressed through the National Pollutant Discharge Elimination System (NPDES) permit program. The primary focus now is on reducing nonpoint source pollution in order to restore impairments to waterbodies identified on Indiana's 303(d) list that are driven by this type of pollution.

Nutrient Reduction Strategy

As a result of excess nitrogen and phosphorus runoff in the Mississippi and Atchafalaya watersheds, a large hypoxic zone has formed in the Gulf of Mexico, negatively impacting the viability of both local fisheries and coastal communities. Models run by the United States Geological Survey (USGS) assigned nutrient loads contributed by each state in the watersheds to determine the appropriate location for actions to reduce nutrient loading to the Gulf. The USGS's SPARROW (SPatially Referenced Regressions On Watershed attributes) model indicated that Indiana contributes significant loads of nitrogen and phosphorus to the this region. As a result, Indiana has begun the process of formulating a nutrient

reduction strategy to mitigate both point and nonpoint source nutrient inputs to the Mississippi River and ultimately, the Gulf of Mexico.

The Indiana Conservation Partnership (ICP) is the entity preparing Indiana's State Nutrient Reduction Strategy. The formulation of this specific strategy will fulfill recommendations generated by the Mississippi River/ Gulf of Mexico Watershed Nutrient Taskforce. The first Action Item of the 2008 Gulf Hypoxia Action Plan is to "Complete and implement comprehensive nitrogen and phosphorus reduction strategies for states within the Mississippi/Atchafalaya River Basin encompassing watersheds with significant contributions of nitrogen and phosphorus to the surface waters of the Mississippi/Atchafalaya River Basin, and ultimately to the Gulf of Mexico." A workgroup containing members of the Indiana Conservation Partnership (ICP) has been established. The ICP consists of the Indiana Department of Environmental Management, the Indiana Department of Natural Resources, the Indiana State Department of Agriculture, the Indiana Association of Soil and Water Conservation Districts, the United States Department of Agriculture's Natural Resource Conservation Service, Farm Service Agency, Purdue University Extension and State Soil Conservation Board. This comprehensive state plan will address point source and nonpoint sources, as well as urban and rural sources. These strategies will include input from stakeholders, characterizations of watersheds, prioritization of watersheds, historic documentation, possible target reductions, BMP/conservation planning, and monitoring. The plan also will look at the economic impacts that affect nutrient reduction.

Five principles will guide this plan:

- Encourage voluntary, incentive-based, practical, and cost effective actions.
- Use existing programs.
- Follow adaptive management.
- Identify existing and additional funds needed and funding sources.
- Identify opportunities for innovative, market-based solutions.

In other words, one of the main goals of this plan is to identify and implement existing programs and practices, and to identify where these should be implemented. Additionally, the plan will discuss ways the partnership and other organizations in the state can track conservation and BMP implementation in an efficient and consistent manner. Having a plan in place will bolster Indiana's eligibility for future funding opportunities.

The workgroup is drafting a plan that will subsequently be reviewed by stakeholders. Stakeholder input is a very important part of this plan, as without stakeholder support, implementation of nutrient reduction strategies will not occur.

IDEM's Nonpoint Source Goals and Progress

Section 319(h) of the Clean Water Act (CWA) establishes a national program to address nonpoint sources of water pollution, which are the leading causes of water quality degradation in the United States. Section 319(h) of the CWA specifically authorizes EPA to award grants to states with approved Nonpoint Source Management Program Plans. As required by Section 319(h), each state's Nonpoint Source Management Plan describes the state program for nonpoint source management and serves as the basis for how funds are spent. IDEM completed the update of the Indiana State Nonpoint Source Management Plan (the Plan) in December of 2008. IDEM received approval from U.S. EPA for the updated Plan in January of 2009. In the process of updating the State Nonpoint Source Management Plan, IDEM evaluated the State's nonpoint source goals and made significant changes to the goals, to better align the goals with the direction the program will need to take to reach its long term goal. This report contains the new goals and progress made to date on the goals.

The Plan lays out a strategy to achieve the primary long-term goal for the State of Indiana's Nonpoint Source Program. Achieving this goal relies on the support, cooperation, and resources IDEM and its partners offer to address nonpoint source pollution in Indiana. Some goals will be easier to achieve than others. IDEM recognizes that the plan is a living document. As progress is made towards the achievement of the goals and objectives, the Plan will be evaluated. Objectives and the approaches to reach objectives will be restructured to reflect both progress made and challenges encountered.

The State of Indiana's Long Term Goal

Indiana's long-term goal is to:

Make measurable improvements in water quality by addressing nonpoint source pollution through education, planning, and implementation.

The Plan lays out steps to achieve this goal by providing a single, unified, and coordinated approach to dealing with nonpoint source pollution structured around program objectives. Achievement of the long-term goal will be reached through efforts made on a number of more detailed objectives. Collectively, these objectives will lead to the development of processes, programs, and skills needed to improve water quality and reduce nonpoint source pollution. The key components of the long-term goal are:

1. Identify gaps in knowledge concerning nonpoint source pollution issues in Indiana;
2. Characterize the extent and magnitude of nonpoint source pollution in Indiana;
3. Build partnerships to reduce nonpoint source pollution and improve water quality within all impaired water bodies in Indiana;
4. Focus resources within IDEM to help educate, train, and assist stakeholders and partners as they work to address nonpoint source pollution; and,

5. Target resources to activities that will result in measurable improvements in water quality and reduce nonpoint source pollution.

The long-term goal and corresponding program objectives will help guide efforts to realize the vision. In the Plan, short-term refers to one to five years. Medium-term refers to four to seven years. Long-term refers to seven to ten years from the adoption of the Plan. All objectives build on each other with the achievement of long-term objectives relying on the achievement of short-term and medium-term objectives. Program objectives are expressed as activities linked to the long-term goal.

Goal Progress

IDEM set forth a series of goals to assess progress on addressing nonpoint source pollution. The goals have been categorized by the following different areas: monitoring, partnerships, capacity building, and funding priorities and adaptive management. Following are the goals and progress made with each of the goals. IDEM is reporting on all short term goals in this report; any medium or long term goals where work has occurred also have been reported. The full set of goals can be found at:

http://www.in.gov/idem/nps/3142.htm

Monitoring

Objective A: Nonpoint Source Water Quality Monitoring Strategy

Goal	Measure
Short-term: Develop a nonpoint source monitoring strategy in conjunction with IDEM's Assessment Branch to evaluate the magnitude and extent of nonpoint source pollution within the state of Indiana.	Measure: Completion of the nonpoint source monitoring strategy and its incorporation into IDEM's comprehensive water quality monitoring strategy.
Progress or Accomplishments: The nonpoint source monitoring strategy was completed and submitted to U.S. EPA on December 31, 2009.	

Goal	Measure
Short-term: Develop a data quality objective (DQO) process to require performance and acceptance criteria for data collection by third party entities.	Measure: Completion of a third party DQO process to serve as the basis for designing a plan for collecting data of sufficient quality and quantity to support the goals of the study.

Progress or Accomplishments: The table below describes the overall structure of IDEM's External Data Framework, which includes potential uses of external data and their corresponding data quality levels.

	Data Quality Level	*Potential Uses of the Data by OWQ Programs*
Increasing Data Quality Requirements ↑	**3**	Any Level 1 or Level 2 use TMDL Modeling CWA Section 305(b) Water Quality Assessments CWA Section 303(d) Listing Decisions Demonstrating the effectiveness of any implementation effort such that one/more impairments may be removed from the State's 303(d) List of Impaired Waters Determining representative background conditions for the purposes of developing National Pollutant Discharge Elimination System (NPDES) permits
	2	Any Level 1 use Supplementary information for use in planning and prioritization of IDEM monitoring efforts or TMDL development Demonstrating the effectiveness of TMDL implementation efforts Demonstrating the effectiveness of WMP implementation efforts Baseline data collection for analysis of trends over time Watershed management planning Demonstrating compliance with minimum control measures specified in Municipal Separate Storm Sewer Systems (MS4) permits Establishing need for low interest loans to assist with Regional Water and Sewer District (RSWD) formation
	1	Education and raising awareness of water quality issues Supplementary information for Total Maximum Daily Load (TMDL) development Supplementary information for development of Indiana's Integrated Water Monitoring and Assessment Report (IR)

Data quality objectives for Level 3 Data (the most stringent level with regard to data quality) and Level 1 (the least stringent) have been drafted and are currently being finalized. Level 2 data quality objectives will build upon the products developed through the Environmental Indicators project, funded by a Section 319(h) grant and spearheaded by Purdue University. The External Data Framework is expected to be completed and ready for implementation in 2012.

Goal	Measure
Medium-term: Use additional resources (e.g., staff, funds, and technical support) to monitor water quality in watersheds where nonpoint source restoration activities have occurred. The monitoring data will be compared to baseline information, if available, to gauge the efficacy of the work.	Measure: Implementation of the nonpoint source monitoring program and analysis of data collected.
Progress or Accomplishments: In 2009, IDEM conducted a pilot sampling project geared towards assessing nonpoint source grant funded implementation projects and their potential impact on water quality. Sampling of 319(h)-funded BMP filter strip reaches was conducted as a component of the Surveys Section 2009 Source ID studies in the Upper Eel River watershed. This sampling was conducted to evaluate the effect of the filter strips on water quality. In 2011, IDEM sampled Wildcat Creek and Little Elkhart River to investigate the possible improvement of water quality through nonpoint source restoration activities. Results of those activities are not yet available. Also in 2011, IDEM began its first baseline study for watershed planning in the Plummer Creek watershed. This study will lay the foundation for future analysis of water quality improvements gained through nonpoint source restoration activities.	

Objective B: Data Collection

Goal	Measure
Medium-term: Develop and implement a system to store and evaluate nonpoint source pollution environmental monitoring data collected in the state of Indiana.	Measure: Completion of a nonpoint source pollution database for the storage and evaluation of data collected by nonpoint source projects.
Progress or Accomplishments: To provide a mechanism to enter 319(h) project data into EPA's Storage and Retrieval System (STORET), the Nonpoint Source Program used funds to build onto and improve the existing water quality database management system, Assessment Information Management System (AIMS), currently used by the Watershed Assessment and Planning Branch (WAPB) in IDEM. The existing AIMS application handles data from multiple water quality and aquatic biota programs and is being expanded to include the programs, projects, and data collected through the nonpoint source and water quality grants. The improvements incorporated web browser access for staff and management and enhanced STORET interface capabilities to benefit all water quality programs in meeting federal mandates for this program and the agency's other water quality monitoring programs. Additionally, the query and analysis tools available in AIMS help in the evaluation of the data through statistical and GIS applications, and allow watershed group nonpoint source data to be integrated with the WAPB point and nonpoint source monitoring data for further program analyses. The project has been completed. To accurately enter data into the database, IDEM is distributing templates to grantees and contractors for electronic submittal. Once these sheets are loaded into AIMS, IDEM will work to have the data uploaded to US EPA via WQX. The project under which this work was funded has been closed. IDEM anticipates investing additional funds to work out the bugs that the State is still experiencing with the AIMS enhancement.	

Partnerships

Objective A: Improve U.S. EPA/IDEM Nonpoint Source Program Coordination

Goal	Measure
Short-term: Establish a formal schedule of meetings with U.S. EPA to evaluate IDEM's Nonpoint Source Program and obtain feedback on program improvement opportunities and successes.	Measure: Establishment of a fixed communication schedule for program coordination.
Progress or Accomplishments: No formal schedule of meetings with US EPA has been set. However, IDEM and US EPA have coordinated on a number of projects, such as the Nonpoint Source/TMDL template, the Salt Creek Stormwater/Nonpoint Source/TMDL project, the development of Social and Environmental Indicators, and various partnership discussions. Communication is regular with US EPA staff on policy and program issues.	

Objective B: Support the Indiana Department of Natural Resource (IDNR) on the Section 6217 component of the Indiana Coastal Zone Management (CZM) Program

Goal	Measure
Short-term: Support the IDNR on the Coastal Zone Management Program in obtaining full program approval.	Measure: Number of conditions resolved through the collaborative efforts of the two programs.

Progress or Accomplishments: IDEM has provided support to the IDNR on the Coastal Zone Management Program in a number of keys areas that will assist with full program approval.

- IDEM published the Indiana Storm Water Quality Manual in October 2007. The manual provides guidelines and specific BMPs for controlling post construction stormwater runoff and site clearing that are consistent with the guidance for new site development.
- In 2009, IDEM updated the watershed management plan checklist to emphasize that watershed management plans developed within the coastal zone management area should not only be consistent with EPA's "9 Key Elements" for watershed planning but also the Section 6217 guidance. Tentatively, by 2018, the state plans to have approved watershed plans in place for each subwatershed within the Little Calumet-Galien watershed, which is the Indiana coastal zone. With nearly 90% of the subwatersheds already covered by watershed plans, the state is well on its way to meeting its goal.
- IDEM also included in its 2009 watershed management plan checklist that all watershed management plans developed within the coastal zone must be consistent with guidance on hydromodification measures. To help ensure the checklist is followed, only watershed planning activities that adhere to the checklist are eligible for Section 319(h) funding. IDEM provides directed assistance to watershed planning groups to reinforce that watershed plans within the coastal zone are appropriate when concerning hydromodification.
- IDEM has worked continuously with the IDNR on the CZM Program to identify possible opportunities to help achieve full program approval via the use of Section 319(h) funds. Reductions to overall staffing across all state agencies have delayed this process.

Goal	Measure
Medium-term: Develop a collaborative approach between IDEM and IDNR to work on local watershed management planning and implementation efforts in the Great Lakes drainage basin.	Measure: Number of projects in the coastal zone where IDEM has worked collaboratively through funding, technical support, or other methods with stakeholders in the Lake Michigan and Lake Erie watersheds.
Progress or Accomplishments: In progress. IDEM's Nonpoint Source Program has been working with the Coastal Zone Program, the IDNR Lake and River Enhancement (LARE) Program, and the IDEM TMDL Program to coordinate the development of a watershed management plan and a multi-parameter TMDL for Indiana's portion of the Galena River. IDEM views this project as a model for similar future projects in coastal watersheds that can focus planning efforts to move more quickly to implementation of BMPs to improve water quality. The Galena River TMDL and Watershed Management plan have been completed. In addition, the Section 319 funds are being used to write a watershed management plan for the East Branch of the Little Calumet River, which is also in the coastal zone.	

Objective C: IDEM Programs

Goal	Measure
Short-term: Focus nonpoint source financial and technical resources in watersheds with approved TMDLs that address nonpoint source pollution and implementable watershed plans that are supported by a local watershed group.	Measure: Number of watersheds with approved TMDLs that address nonpoint source pollution impacts and that have Section 319(h)-funded planning or implementation activities occurring.
Progress or Accomplishments: Ongoing. IDEM has focused Section 319(h) funds on watersheds with approved TMDLS for five funding cycles. Appendix B of this report illustrates the progress made on aligning these two programs. IDEM continues to work on a "TMDL Template" which incorporates the nine key elements of a WMP into the TMDL process. The project is on schedule for completion in the fourth quarter of 2011.	

Goal	Measure
Short-term: Work collaboratively with IDEM's monitoring and assessment programs through the establishment of a formal nonpoint source monitoring strategy.	Measure: Creation of a nonpoint source monitoring strategy and internal procedures detailing needed monetary and staffing resources.
Progress or Accomplishments: Complete. In late 2010 and early 2011, the Watershed Assessment and Planning Branch revised its Water Quality Monitoring Strategy, including the formal addition of the nonpoint source monitoring strategy and strategies for monitoring restored waterbodies for the purposes of delisting from the 303(d) list. The 2011 sampling season is the first season under this new strategy. In addition, the Nonpoint Source Program is using section 319(h) funds to support a position that will be responsible for analyzing and interpreting data collected by IDEM for the NPS baseline monitoring projects to support local watershed groups in their planning efforts, and for working to ensure that watershed groups understand how the results may be incorporated into their watershed plans.	

Goal	Measure
Medium-term: Use input obtained from nonpoint source partners to develop and revise, as needed, a comprehensive IDEM Watershed Specialist strategy to support IDEM's internal and external partner's efforts to focus on alleviating nonpoint source pollution issues.	Measure: Completion and implementation of a comprehensive Watershed Specialist strategy.
Progress or Accomplishments: Complete. A strategy for the focus and use of these positions has been developed, taking into consideration input from partners such as the Department of Natural Resources, the State Department of Agriculture, the Indiana Association of Soil and Water Conservation Districts and the Natural Resources Conservation Service. An updated version of the current strategy was posted to the revised IDEM Nonpoint Source website.	

Objective D: Nonpoint Source Partnerships

Goal	Measure
Short-term: Create an advisory group of state and federal agencies, as well as interested entities and organizations, to assist with refining the state's nonpoint source policy and procedures for all programs and agencies that work with nonpoint source pollution.	Measure: Creation of an advisory group to the IDEM Section 319(h) Program on nonpoint source issues that includes representatives from all applicable programs and partnerships, both regulatory and non-regulatory.
Progress or Accomplishments: Initial work to scope the potential membership and mission of this group has occurred, but no formal meetings have taken place. However, through the Indiana Conservation Partnership leadership meetings there is opportunity to discuss IDEM's Section 319(h) grant program as well as statewide nonpoint source issues. IDEM anticipates forming the advisory group in 2012 to begin work on revisions to the NPS State Management Plan that will be due in 2013.	
Goal	**Measure**
Short-term: Use current IDEM Watershed Specialists to assist partners with nonpoint source planning and implementation activities.	Measure: Percentage of partner projects working with an IDEM Watershed Specialist for nonpoint source-related activities.
Progress or Accomplishments: Ongoing. Watershed Specialists have been providing technical support to watershed groups for six years, assist IDNR with the review of Lake and River Enhancement grant applications and watershed management plans, serve on the planning committee for the IASWCD Annual Conference, and work with ISDA district support specialists.	

Goal	Measure
Medium-term: Work with surrounding states that share watersheds with Indiana to develop consistent approaches to addressing nonpoint source pollution.	Measure: Creation of standard operating procedures to work with Ohio, Michigan, Illinois, and Kentucky on the coordination of nonpoint source activities within watersheds that span state boundaries.
Progress or Accomplishments: Watershed Specialists have been working with several bi- and tri-state watershed groups and their partners to create watershed management plans, including the Upper Maumee and Middle St. Joseph WMPs, that meet the checklists of multiple states. In addition, the TMDL program is currently working on a bi-state TMDL for the Pigeon River with the State of Michigan. As a result of these multi-state efforts, representatives from IDEM, Ohio EPA, and Michigan DEQ have shared information on checklist requirements, monitoring procedures, and TMDL processes in their respective states. While no SOPs have been produced, the "work" of this goal is still being accomplished – it is possible that this metric will need to be revisited in the future.	
Goal	**Measure**
Long-term: Establish a formal process to maintain an inventory of watershed groups, organizations, and governmental entities whose primary purpose is to study, plan, or manage nonpoint source pollution.	Measure: Creation and maintenance of a web-based database of active watershed groups, organizations, and governmental entities whose primary purpose is to study, plan, and manage nonpoint source pollution. The database will be deployed on IDEM's web site.
Progress or Accomplishments: In progress**.** Creation of an inventory of watershed-based organizations was accomplished in 2007 and was updated in 2011. Purdue University, as a part of their Watershed Leadership Program, has produced a GoogleMaps-based tool for locating watershed groups entitled the Indiana Watershed Group Finder, which is currently undergoing maintenance. This inventory is also the basis for the Watershed Specialists database, a database of group contacts and progress information that IDEM plans to integrate into a much larger, multi-functional database that will more easily provide geospatial information, WMPs, load reductions, etc than the various individual databases used throughout the program.	

Capacity Building

Objective A: Develop Education and Training Initiatives for Use at the Watershed Level to Build Capacity of the Staff of Watershed Groups and Local Governments

Goal	Measure
Short-term: Update IDEM's Nonpoint Source web site to create a repository for information on nonpoint source planning, implementation, and guidance on applying for and implementing Section 319(h) grants.	Measure: Completion of updated Nonpoint Source web site and compilation of a utilization survey.
Progress or Accomplishments: Complete. Deployment of a newly designed and reorganized website occurred in January 2011. A detailed discussion of this project is located in "Working to Improve the Nonpoint Source Program" section of this report.	

Goal	Measure
Short-term: Evaluate existing nonpoint source pollution program partners and determine resources (financial and technical) needed to improve program efficacy.	Measure: Development of partner resource needs report.
Progress or Accomplishments: In progress**.** As a part of the Indiana Conservation Partnership, IDEM participated in an evaluation of technical staff training needs across the Partnership. Training needs were identified through the use of an Individual Skills Inventory that was distributed to all applicable staff in the partnership. Training needs have been ranked and a technical advisory committee has been formed to begin to develop curriculum for these needs.	
Goal	Measure
Medium-term: Develop collaborative training and outreach materials based on needs solicited from partners.	Measure: Number and types of training and types of outreach materials developed and distributed as a result of assessed needs.
Progress or Accomplishments: In process. In 2010, IDEM began to invite its nonpoint source partners to collaborate on watershed networking sessions and other training opportunities in response to needs they've seen from their customers. During this reporting period, IDEM collaborated on two face-to-face events and several webinars that were available to watershed leaders across the state. In addition, IDEM is participating in the Indiana Conservation Partnership's Training and Certification Program to develop curriculum and provide training to staff.	
Goal	**Measure**
Long-term: Create web-based tools to assist local groups with identification of resources, partners, and technical support to create more self-sustaining watershed groups dedicated to addressing nonpoint source pollution.	Measure: Number and type of IDEM Nonpoint Source web site hits.
Progress or Accomplishments: Ongoing. IDEM has begun to work on this objective through the creation of tools for its new website. Tools created to date include e303d, ePrintshop, and the Watershed Toolkit. In addition, we've worked in partnership to create the Indiana Water Monitoring Inventory, Hoosier Riverwatch database, Online Load Duration Curve and web-based LOADEST interface. The creation of tools will be on-going as new needs come to the forefront and resources become available to create them.	

Objective B: Comprehensive Training Program

Goal	Measure
Short-term: Develop and conduct training workshops to inform 319(h) grant recipients about key program policies and provide training on grant implementation.	Measure: Annual Section 319(h) training workshop conducted by IDEM that is available for all grant recipients and applicants.
Progress or Accomplishments: Complete. The Nonpoint Source Program held the first 319(h) and 205(j) grant orientation meeting on June 12, 2009. This meeting informed grantees on all aspects of the program. No further training workshops have been conducted, but the training materials were posted on the IDEM web site, and in 2010 and 2011, grant recipients were asked to review the materials and prepare any questions prior to the initial site visit with IDEM upon the start of their projects.	

Objective C: Raise Public Awareness and Provide Education through Outreach Activities

Goal	Measure
Short-term: Enhance efforts to educate citizens on urban and agricultural nonpoint source issues through the development of a comprehensive outreach campaign.	Measure: Number of outreach efforts conducted, categorized by training versus education.
Progress or Accomplishments: In progress. Education materials including six new brochures, seven bill stuffers, and several large-scale displays were completed in early 2011. These are available to be used by IDEM staff and nonpoint source partners to educate the public on nonpoint source issues and concerns. A detailed discussion of this project is located in "Working to Improve the Nonpoint Source Program" section of this report. In addition, the IDEM Watershed Specialists worked with others in the Indiana Conservation Partnership, as well as the regulated storm water community, to bring Eric Eckl of Water Words That Work to Indiana to assist educators and other water pollution professionals to adapt their publications so that the public will be receptive to them.	
Goal	**Measure**
Medium-term: Develop a repository of web-based public outreach and educational materials for use by internal and external partners and local watershed groups.	Measure: Number of IDEM Nonpoint Source website hits.
Progress or Accomplishments: Complete. A newly designed and reorganized website was deployed in early 2011.	

Objective D: Build Sustainable, Locally-Led Watershed Groups

Goal	Measure
Short-term: Work with active watershed groups to assess resource (technical, financial, and managerial) needs to enhance or ensure sustainable activities beyond Section 319(h) funding.	Measure: Number of watershed groups that actively seek and obtain funding, in addition to Section 319(h), to sustain their organization and to continue their efforts to reduce NPS pollution.
Progress or Accomplishments: Ongoing. IDEM's Watershed Specialists work closely with Indiana's watershed groups to increase group sustainability and effectiveness, and gauge future resource needs. Since this work is continual, a detailed description of IDEM's work on this goal is found at the "Working to Improve the Nonpoint Source Program" section of this report under Watershed Specialists and Networking Sessions.	

Goal	Measure
Long-term: Work to create new watershed groups from ground level and provide these groups with a strong base for sustainability.	Measure: Number of new watershed groups formed subsequent to January 2009.
Progress or Accomplishments: Ongoing. IDEM's Watershed Specialists have assisted over 100 active and developing watershed projects, sponsored by watershed groups, SWCDs and other entities on many levels including: meeting facilitation, reviewing draft and final watershed management plans, developing and reviewing grant proposals from several funding programs, obtaining water quality data and developing watershed maps, connecting groups with other local organizations and agencies to complement planning efforts, and assisting watershed coordinators with the overall watershed planning and implementation processes. Much of this work has insured that existing groups have remained functional and active; however, at least ten new groups have been formed during this reporting period across the state.	

Funding Priorities and Adaptive Management

Objective A: Focus Section 319(h) Planning Funds

Goal	Measure
Short-term: Target Section 319(h) funds in appropriate amounts, to watershed groups that will develop and implement watershed plans to address 303(d)-listed waters impaired by nonpoint source pollution.	Measure: Number of watershed groups developing and or implementing watershed plans in 303(d) listed waters receiving Section 319(h) funds in appropriate amounts to accomplish their projects goals.
Progress or Accomplishments: Section 319(h) program funding priorities are to plan for and implement plans on waters listed on the 303(d) list or waters for which a TMDL has been calculated. In FFY 2011, the Nonpoint Source Program successfully completed six watershed management plans. To date, there have been 38 plans implemented of which five began implementation in FFY 2011.	
Goal	**Measure**
Medium-term: Assess water quality data to identify watersheds that should be evaluated for possible nonpoint source water quality improvements.	Measure: Number of watersheds identified for evaluation of nonpoint source water quality improvements.
Progress or Accomplishments: In progress. IDEM has developed a draft list of watersheds where Section 319(h)/205J funds have been allocated to local watershed groups that have implemented significant on-the-ground nonpoint source best management practices. These watersheds have been cross-referenced with the 2002 303(d) list to identify waters that may meet the SP-12 (Measure W) and WQ-10 (Success Stories) requirements and should be re-evaluated. Identification of watersheds for targeted monitoring for delistings is currently tracking with current monitoring resources. However, it is anticipated that identification will out-pace monitoring capacity so that a running list of waters to test will be kept by the Watershed Assessment and Planning Branch.	

Goal	Measure
Long-term: Work with internal and external partners to solicit and utilize joint funding strategies, including Section 319(h) funds, in watersheds where other partner-funded projects are occurring to maximize the efficacy of funds.	Measure: Number of projects funded by Section 319(h) in connection with other partner funds that document improvements in water quality where nonpoint source pollution was identified and a watershed approach was used to solve the problem.
Progress or Accomplishments: One partnership project in the Galena River watershed has been completed that meets the intent of this goal. Additional projects show promise of meeting this goal and will be reported as improvements in water quality are documented.	

Objective B: Target Key Pollutants and Watersheds

Goal	Measure
Short-term: Determine the extent of impacts that sediments, bacteria, nutrients, and other identified nonpoint source pollutants have on Indiana waters.	Measure: Document the results of impact analysis.
Progress or Accomplishments: Ongoing. The completion of the External Data Framework (the acceptance criteria IDEM will use to evaluate water quality information provided by external organizations for potential use in OWQ's 305(b)/303(d) assessment and listing processes) will help move progress on this goal ahead. Additional data is needed to provide a larger spatial analysis of water quality concerns in Indiana. This goal may need to be adjusted to a medium term goal to reflect the time needed to collect and analyze data.	
Goal	**Measure**
Medium-term: Target Section 319(h) funds to watersheds with waters that are impaired by nonpoint source pollution and where TMDLs can be implemented.	Measure: Number of watersheds that have received Section 319(h) funds where implementable TMDLs have been completed.
Progress or Accomplishments: Currently, there are 383 out of 1,589 HUC 12s in Indiana that have both a TMDL and an approved watershed management plan. There are at least 136 HUC 12s where TMDLs are being implemented, in part, by projects funded by Section 319(h) grants.	

Objective C: Adaptive Management

Goal	Measure
Short-term: Work with U.S. EPA to establish a comprehensive adaptive management program to improve all aspects of the implementation of the IDEM Section 319(h) Program with clearly delineated priorities and corrective actions.	Measure: Percentage of program completion
Progress or Accomplishments: The Watershed Assessment and Planning Branch Chief, the Watershed Planning and Restoration Section Chief and the Senior Project Manager met with U.S. EPA Region V in mid-2011 to discuss several program issues and next steps. It is IDEM's intention to work with U.S. EPA to establish a more formal adaptive management program in the near future.	

RESTORATION EFFORTS AND ACHIEVEMENTS

A primary focus of IDEM's Nonpoint Source Program is on-the-ground work to improve water quality. Funding for the development and implementation of watershed plans that work to restore water quality on waterways impaired for nonpoint source pollution has resulted in measurable improvements, especially in terms of estimated pollutant load reductions and stakeholder involvement. However, more work remains to fully restore water quality.

Section 319(h) & Section 205(j) Grant Programs

The Watershed Planning and Restoration Section in the Office of Water Quality manages two federal pass-through grant programs aimed at improving water quality in the state: Section 319(h) and Section 205(j); each named after the section of the Clean Water Act that authorizes them. More information about the two grant programs in Indiana may be found on IDEM's website at http://www.in.gov/idem/nps/.

The Section 205(j) Grant Program is dedicated to water quality management planning. Funds are used to determine the nature, extent, and causes of point and nonpoint source pollution problems and to develop plans to resolve these problems. In FFY 2011, Indiana was allocated $359,000 in 205(j) funds. In addition, old 205(j) funds are being rolled over into the FFY 2011 grant, so the total available funds will be $699,775. Four projects will be funded with this money, including one project doing monitoring in the Wabash River, one focused on training Indiana Conservation Partnership staff (see Working to Improve the Nonpoint Source Program Section for more information on this initiative), one working on maintaining and enhancing the IDEM Assessment Information Management System (AIMS) water quality database and one developing a watershed management plan. A list of all 205(j) projects open during this fiscal year may be found in Appendix D.

The Section 319(h) Program is one of the primary resources for reducing nonpoint source pollution in Indiana. In FFY 2011, Indiana was allocated $3,763,000 in Section 319(h) funds. Eight projects are in the process of being approved and will be funded with this money. Two other projects submitted for FFY11 funding were added to the FFY09 grant to use up the balance. Most of the projects will begin this fall or winter. Each year proposals are submitted, reviewed by a committee, and selected for funding based on the Nonpoint Source Program's priorities and the quality of the proposal. The program focus has changed over the years from funding many smaller projects, to funding fewer, larger, better quality projects with a greater opportunity for showing water quality improvements. In addition, more emphasis is being placed on project partners and documentation of their commitment to the project in the grant application. Strong partnerships are a key to project success. Also, more projects are now implementing watershed management plans and utilizing more 319(h) funds to implement on-the-ground BMPs in their watersheds. There are currently thirty-three open or pending 319(h) projects (not counting FFY 2011), of which twenty-four are implementing watershed management plans and installing BMPs in critical areas of the watershed as determined by the watershed management plan. A list of all 319(h) projects open during this fiscal year is located in Appendix C.

Projects are administered through grant agreements that spell out the tasks, schedule and budget for the project. Projects are normally two to three years long and work to reduce nonpoint source pollution and improve water quality in the watershed primarily through: education and outreach designed to bring about behavioral changes and encourage BMP implementation that leads to reduced nonpoint source pollution; development of WMPs that meet EPA's required nine elements; and implementation of WMPs involving a cost-share program to implement BMPs that address the water quality concerns outlined in the WMP. Locations of both Section 319(h) and Section 205(j) projects funded from FFY 2005-2010 are shown in Appendix A.

IDEM Project Managers work closely with the project sponsors to help ensure that the project runs smoothly and the tasks of the grant agreement are fulfilled. Site visits are conducted at least quarterly to touch base with the project, provide guidance and technical assistance as needed, and to work with the grantee on any issues that arise to ensure a successful project close-out. Basic project information for all Section 319(h) projects is entered and maintained in EPA's Grant Reporting and Tracking System (GRTS) database. The GRTS mandated elements entered for projects include the project schedule, budget, description, type of BMPs implemented, location of BMPs, estimated pollutant load reductions, and progress reports. Information about Section 319(h) projects can be viewed in GRTS on the GRTS Home Page.

Thirteen Section 319(h) projects closed this fiscal year, including two planning projects, nine implementation projects, and two Nonpoint Source Program support projects. Summaries of these projects may be found in Appendix E. Final reports and products from the projects that closed this year are included as an attachment to this report, and a list of final reports is also included in Appendix E.

Nonpoint Source Program Focus

In an effort to more efficiently meet our Nonpoint Source Program goals, coordinate with the TMDL Program and its efforts to identify and reduce nonpoint source pollution, and focus more of the Section 319(h) funds on impaired waters, IDEM has identified priority projects for Section 319(h). The focus of the Program for FFY 2011 was:

- Watershed management planning in areas with waterbodies on the State 303(d) List of Impaired Waterbodies. See the 2008 303(d) List Categories 4A and 5A Only [XLS] for the list of nonpoint source impaired waterbodies.
- Implementing watershed management plans that meet IDEM's 2003 [DOC] or 2009 Watershed Management Plan Checklist.
- Watershed management planning and implementation in areas with approved Total Maximum Daily Loads (TMDLs). See the Total Maximum Daily Load Program for more information.
- Projects that support the mission of the sponsor and have a statewide applicability for water quality improvements or capacity building at the local level.

A Geographic Information System (GIS) map was created (Appendix B) to identify the relationship between TMDL development and watershed management activities in the state. It also shows the areas of Indiana where there are watersheds with nonpoint source impaired waterbodies as listed in the 2008 303(d) List of Impaired Waterbodies. Having these areas represented geographically assists program managers with applying a targeted approach to watershed management, and provides for coordination of TMDL development, and watershed planning and implementation efforts in areas of the state most in need of restoration. Targeting areas for watershed planning with developed TMDLs helps expedite the planning process since groups can use information in the TMDL regarding watershed nonpoint source problems, sources, and needed load reductions.

Of the ten Section 319(h) projects funded in FFY 2011, all address one or more of the Nonpoint Source Program priorities. Two projects have statewide applicability for improving water quality or building capacity of watershed groups, three projects are focused on implementing watershed management plans, and five projects are developing (and in most cases starting to implement) a watershed management plan in a watershed with 303(d) listed waters; four of which have TMDLs.

Developing and implementing a comprehensive watershed management plan is an effective way to focus efforts and resources on a watershed and its particular problems, and to implement solutions to those problems. All new watershed management plans being developed must meet the required elements of IDEM's 2009 *Watershed Management Plan Checklist* before they can be implemented. The checklist incorporates EPA's nine required components of a watershed-based plan, and also comes with comprehensive guidance on IDEM's Nonpoint Source Program expectations, as well as examples and direction on how to meet those expectations.

Organizing a group to develop a watershed management plan that meets the required elements can be a daunting task. To help groups develop watershed management plans, IDEM developed the *Indiana Watershed Planning Guide*. This guide was revised in late 2010 to better serve our customers with new information, lessons learned from grantees, and updated links to tools and support. In the watershed planning process, local stakeholders join forces to develop watershed management plans at the hydrologic unit code (HUC) level that make sense for the particular conditions found in that watershed. The group identifies the problems, causes, sources, and critical or target areas in the watershed, then sets goals and chooses measures or BMPs to be implemented to achieve those goals. Critical areas are defined in IDEM's checklist guidance as areas where implementation can remediate nonpoint sources in order to improve water quality and/or mitigate the impact of future sources in order to protect water quality. Indicators are chosen and monitored to evaluate the effectiveness of the implementation efforts.

In addition to the resources listed above, additional help with the planning process is provided to watershed groups by the IDEM Project Manager and Watershed Specialist.. These key IDEM staff meet with the local Watershed Coordinator, attend stakeholder meetings, help guide the group through the decision making process, and provide technical support on issues such as determining pollutant loads and/or load reductions needed for the plan. This extra guidance is invaluable as groups strive to develop a plan that meets IDEM's Checklist. Once the plan is complete, it provides a road map for how to allocate resources most effectively to address the priority water quality concerns in the watershed.

Pollutant Load Reductions

One important indicator of program and project success is the quantity of pollutants, such as sediment, phosphorus, nitrogen, and *E. coli,* that has been prevented from entering waterbodies as a result of BMPs implemented. Pollutant load reductions, in most cases, are estimated using the Region 5 Load Estimation Model. This simple Excel model provides a general estimate of pollutant reductions (sediment, phosphorus, and nitrogen) at the source level from structural and agricultural field practices and urban BMPs. Reductions achieved through practices related to nutrients (not tied to sediment), bacteriological, and pesticide management are not usually captured through this estimation method. Another model or method for estimating these load reductions must be used. In addition to the Region 5 Model, the Spreadsheet Tool for the Estimation of Pollutant Load (STEPL) model also is available and is used by some groups in Indiana. This model calculates nutrient and sediment loads by land use type and aggregated by watershed. In a few cases, reporting pollutant load reductions may not be feasible because of the type of BMP installed.

Estimated load reduction data for each BMP implemented is submitted by the project with their invoice and entered by the IDEM Project Manager into an Access database at IDEM and the EPA GRTS database.

Reported estimated load reductions from Section 319(h) projects for BMPs implemented this FFY (since 9/1/2010) are listed below. All data was obtained from IDEM's Access database.

Nonpoint Source Pollutant	Reduction
Sediment	28,880 tons/yr
Phosphorus	33,434 lbs/yr
Nitrogen	70,450 lbs/yr
Biological Oxygen Demand	6,628 lbs/yr
Chemical Oxygen Demand	1,977 lbs/yr
Pesticides	490 lbs/yr
Suspended Solids	5,970 lbs/yr
Lead	5 lbs/yr
Zinc	7 lbs/yr
Total Kjeldahl Nitrogen	23 lbs/yr

BMPs implemented include conservation tillage, cover crop, pasture and hay planting, grassed waterways, water and sediment control basins, critical area planting, fencing, heavy use area protection, stream crossing, prescribed grazing, nutrient management, pest management, rain gardens, porous pavement, and rain barrels.

Cumulative total estimated load reductions achieved in Indiana from Section 319(h) projects to date are:

Nonpoint Source Pollutant	Reduction
Sediment	230,738 tons/yr
Phosphorus	371,902 lbs/yr
Nitrogen	644,030 lbs/yr

Project Highlights

Two grant projects that closed this fiscal year are highlighted here as examples of successful nonpoint source projects working to improve water quality through watershed planning, implementation of BMPs, and education/outreach. The information below was taken from the project's final report.

Region of the Great Bend of the Wabash River Watershed Management Plan

The Wabash River rises in western Ohio and flows 475 miles to the west and south through northern Indiana to its confluence with the Ohio River below Mount Vernon, Indiana in the southwest corner of the state. The river occupies the heartland of Indiana draining two-thirds of the 92 counties (over 32,000 square miles) collecting runoff from agricultural lands, cities and towns in Ohio, Indiana, and Illinois. The Region of the Great Bend of the Wabash River watershed is composed of three 10-digit Hydrologic Unit Code (HUC) watersheds in the Wabash River watershed including Wea Creek (HUC 0512010801), Burnett Creek-Wabash River (HUC 0512010802), and Kickapoo Creek-Wabash River (HUC 0512010805), and covers portions of Benton, Fountain, Montgomery, Tippecanoe, Warren, and White Counties in Indiana. The Region of the Great Bend of the Wabash River watershed encompasses 306,452 acres or 478 square miles and includes a majority of the cities of Lafayette, West Lafayette, and Battle Ground; all of Shadeland, Otterbein, and Linden; and portions of Attica, Dayton, New Richmond, and Clarks Hill. By the time the river reaches the Greater Lafayette area, it reflects the runoff and inputs from a quarter of the watershed.

As a result of various types and sources of point and nonpoint source pollution, this reach of the Wabash River is impaired for nutrients, pH, *E. coli*, dissolved oxygen, and impaired biotic communities. Habitat within the Wabash River is rated as moderately supporting; however, much of the river corridor lacks adequate riparian cover and contains poor substrates and limited in-stream cover. Despite these deficiencies, the Wabash River is home to resident populations of shovelnose sturgeon, a state species of concern, and several state endangered freshwater mussel species.

In September 2008, the Wabash River Enhancement Corporation (WREC) contracted with the Indiana Department of Environmental Management (IDEM) to develop a watershed management plan (WMP) to address nonpoint source pollution problems in the Region of the Great Bend of the Wabash River watershed. This project lays the foundation for watershed planning and water quality improvement in the watershed. The main goals were to: 1) complete a watershed management plan; 2) develop and implement an education and outreach program; 3) develop and implement a water quality monitoring program aimed at showing change in water quality following implementation; and 4) complete social indicator surveys of rural and urban landowners.

Accomplishments

The Wabash River Enhancement Corporation led development of a WMP which was guided by 20 steering committee members representing government, education, community groups, and neighborhood associations. A comprehensive WMP was developed to meet IDEM's Watershed Management Plan Checklist (updated in 2009) and approved by IDEM for the Region of the Great Bend of the Wabash River. Stakeholder concerns, Geographic Information System (GIS) data, watershed inventories, and historic and current water quality data were evaluated to help determine critical and priority areas. Watershed goals and strategies were developed along with a work plan through 2016 to start the watershed stakeholders on their way to meeting their goals by 2041. The complete WMP may be found on the WREC web site at: http://www.wabashriver.net/lafayetteplanningprocess/.

WREC also developed and implemented an education program based on a combination of required grant-based elements and the needs and wants of the education committee and community partners. WREC mixed hands-on, field activities with static, traditional information sources to provide a balanced education and outreach program to watershed stakeholders. This included public meetings; dissemination of education and outreach materials; a website, www.wabashriver.net, which provided up-to-date information on the status of the project, meeting and event dates, and educational information; hands-on educational activities including field days, workshops, a green tour, volunteer monitoring, and sampling blitzes. WREC's Wabash Sampling Blitz was recognized by EPA in their *Region 5 Water Quality Monitoring Newsletter* in March 2011 (See the Project Recognitions section of this document).

A two-year monitoring program occurred from April 2009 through April 2011. The program included water chemistry, fish and macroinvertebrate community, habitat assessments and a volunteer monitoring program. WREC conducted water chemistry sampling as part of a paired watershed monitoring program. Paired watershed sample sites were selected based on land use and watershed drainage size. The three tributary sites represent two pairs of test watersheds: one urban or urbanizing (Elliot Ditch) paired with the control watershed (Little Pine Creek) and one rural or agricultural (Little Wea Creek) paired with the control watershed (Little Pine Creek). The Wabash River upstream-downstream pair was designed to identify any observable impacts of Greater Lafayette on the Wabash River. Each of the five chemistry sample sites were sampled weekly to establish a baseline of water quality data to which post implementation water quality data will be compared in hopes of showing a measurable change in water quality. Data collected as part of the monitoring program indicate that there are strong relationships between their control and treatment watersheds. This relationship suggests the ability to monitor a change in water quality following implementation within these three basins.

Social indicator surveys were used to determine the knowledge, attitudes, awareness, opinions, and constrains of both urban and rural residents within the Region of the Great Bend of the Wabash River watershed. Measures of attitude toward water quality concerns are similar between urban and rural populations. Most Tippecanoe County residents believe that good water quality is important for the communities that they live in for both economic and quality-of-life reasons. Most individuals feel a degree of personal responsibility for the actions they take that affect local water resources, though they may be unwilling to pay for improvements. In general, survey respondents readily identified visible

water quality concerns such as littering and turbidity. Other problems, especially those related to nutrient loading and aquatic habitat alteration, are less understood. While urban residents cited economic concerns, they also expressed little to no familiarity with many urban water conservation practices. Increasing the distribution of information about these practices, improving access to equipment, and using demonstration areas may convince many urban residents to adopt better management practices without having to provide financial incentives. Rural respondents, particularly those who are agricultural producers, frequently identified financial factors as the primary constraint to adopting conservation practices. Education and outreach efforts are needed across the board in order to effectively change management behaviors. Purdue University and the Tippecanoe County Soil Water and Conservation District are two of the most trusted information sources for natural resource management concerns and would thus make excellent partners for outreach efforts. This survey indicates that WREC has a fairly low public profile and should take advantage of its partnerships with other well-known agencies in order to bolster its own name recognition and ability to achieve its goals.

Funding/Partnerships

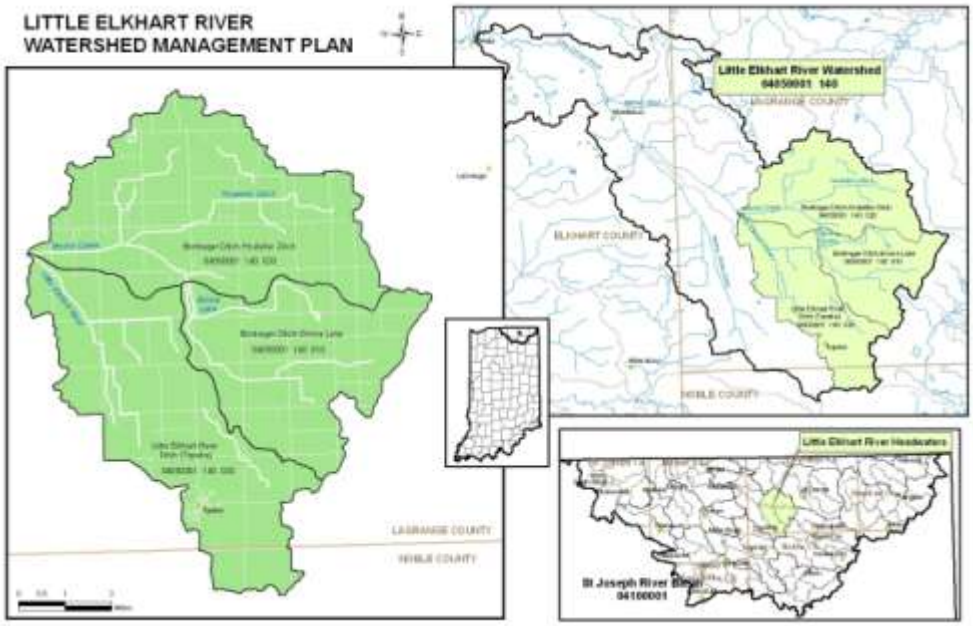
WREC utilized $449,468 in Section 319 funds and documented $299,645 in match for the project. Several partnerships were initiated and relationships cultivated as part of this planning process including the Cities of Lafayette and West Lafayette, Purdue University, Tippecanoe County Parks Department, the Tippecanoe County Surveyor, and the Tippecanoe County Area Plan Commission. Key commercial partners include Indiana-American Water, Cargill, Alcoa, Eli Lilly/Evonik, our Clear-Blue-Green Certified businesses, and the Greater Lafayette Chamber. Partnerships with neighborhood associations, including New Chauncey Neighborhood Association and Centennial Neighborhood Association, with local groups like the West Lafayette Go Greener Commission and Hoosier Environmental Council, governmental agencies including the Warren, Fountain, and Tippecanoe SWCD offices, the Tippecanoe Partnership for Water Quality, and the Towns of Battle Ground and Attica were established as part of this planning effort as well.

Future Activities

The Wabash River Enhancement Corporation was awarded a Section 319 grant in 2011 for a three year project to address water quality problems in three 10-digit watersheds: Wea Creek, Burnett Creek-Wabash River, and Kickapoo Creek-Wabash River. These watersheds were chosen because they include high levels of urban and agricultural activity, contain stakeholders interested in water quality improvement, and contain documented *E. coli*, nutrient, sediment, and biotic community impairments. The project's objectives include: identify specific landowners where implementation practices will be installed; increase awareness about water quality through education and outreach; identify statistically-significant changes in water quality by continuing water quality monitoring to define changes in water quality observed in the paired watersheds and upstream-downstream sites on a weekly basis; and implement a cost-share program by implementing best management practices in critical areas identified by the planning steering committee.

Water Quality Improvement through Best Management Practices: Paired Watershed Study in the Little Elkhart River Watershed

The Little Elkhart River watershed is a sub-watershed of the larger St. Joseph River watershed, (HUC 04050001) which encompasses the southwest portion of the Lower Peninsula of Michigan and northwestern portion of Indiana. The St. Joseph River watershed begins in Michigan's Hillsdale County at Baw Beese Lake, spans the Michigan-Indiana border, and empties into Lake Michigan at St. Joseph, Michigan. The Little Elkhart River watershed comprises the headwaters region of the Little Elkhart River located in West-central LaGrange County, Indiana. Specifically it involves three 14-digit HUC watersheds; Bontrager Ditch-Emma Lake (04050001140010), Bontrager Ditch-Hostetler Ditch (04050001140020), and Little Elkhart River Ditch-Topeka (04050001140030). The map below depicts the three sub-watershed's location within Indiana, the St. Joseph River drainage, and the Little Elkhart River drainage.



The LaGrange County Soil and Water Conservation District (District) has been actively working in the St. Joseph River watershed and its subwatersheds to improve water quality for many years. The District received a Section 319 grant in 2004 to develop a watershed management plan (WMP) for the headwaters of the Little Elkhart River, which was completed in April 2007. In 2006 the District applied for and received a Section 319 grant to implement the St. Joseph River WMP (developed by the Friends of the St. Joe River Association) and the Little Elkhart River WMP (they were working on) while also completing a paired watershed study in the Little Elkhart River watershed.

The purpose of this project was to reduce nonpoint source pollutants by installing appropriate best management practices in the watershed and validate success through a paired watershed study. The watershed management plan identified major contributors causing degradation in the watershed including direct livestock access to surface water system; direct barnyard runoff into surface waters; poor livestock manure management; lack of proper ditch-bank buffering; poor nutrient and pest

management; improper or faulty septic systems; and urban runoff. This project allowed for implementation in the Bontrager Ditch-Emma Lake subwatershed, while the Bontrager-Hostetler Ditch subwatershed was kept as a control.

Accomplishments

The District developed and implemented a successful cost-share program to install BMPs in the watershed to reduce nonpoint source pollution. Over $155,000 in Section 319 funds was utilized to implement BMPs including fencing livestock out of streams, alternative watering systems, roof runoff management systems, heavy use area protection, and a waste storage facility. In addition, 13 comprehensive nutrient management plans were developed for landowners providing the guidelines to handle the nutrients on their farms, and more than 25 manure management plans for chicken houses, duck operations, calf operations, and dairy and beef operations. Estimated load reduction from these BMPs included: sediment - 939 tons/year, phosphorus - 2,190 lbs/year, and nitrogen - 5,608 lbs/year.

Additional practices were installed in the watershed using Lake and River Enhancement (LARE) funds that were received through a grant from the Indiana Department of Natural Resources (DNR) to supplement activities in the Little Elkhart River. Practices completed in this project included: ditch fencing, stream crossing, critical area seeding, a watering facility, and filter strips. A total of $37,734.46 was spent using LARE funds. These projects were used as match for the Little Elkhart River Watershed Project.

The water monitoring program was an essential, though expensive, part of the project. Without the test results some landowners, especially the Amish, might not have been convinced there was a problem with the water quality in the area and might not have participated. Water data collection began in June 2005 under the Section 319(h) grant to develop the watershed management plan for the headwaters of the Little Elkhart River. Based on preliminary data and the unique attributes of the HUC 14 subwatersheds, a paired watershed study began in 2007 to document differences in nonpoint source pollutants between the control and treatment subwatersheds. The Bontrager-Hostetler Ditch was selected as the control and the Bontrager Ditch-Emma Lake was selected as the treatment subwatershed for concentrated BMP implementation. Before BMP installation began, 31 months of baseline data was collected to strengthen the statistical power between subwatersheds.

The Little Elkhart River Paired Watershed Study provides very strong evidence that concentrated BMP installation will significantly reduce nonpoint source pollution. In a watershed that is dominated with livestock issues, particularly livestock with direct access to surface waters, the nonpoint source pollution reduction can occur in a very short time period after BMPs have been installed. The rapid reduction in pollutants is not surprising since a direct source has been mediated. In this study, many BMP installations did not occur until after the 24 month target window yet significant reductions were still achieved. If the installation target window had been met, the reductions were likely to have been even more profound. Total phosphorus has a lag time in demonstrating significant reductions after BMP installation. It is not surprising, with delayed BMP installations, that total phosphorus did not show a statistically significant reduction. Since ammonia baseline data was very limited, statistically it is impossible to show a significant difference between sampled subwatersheds. However, since ammonia

is tied directly with manure contamination, logic dictates that significant reductions where likely achieved.

Nonpoint Source Pollutant	Control Watershed % Reduction	Treatment Watershed % Reduction
E. coli	25.12	93.63
Total Phosphorus	60.76	76.09
Nitrates	17.14	40.74
Ammonia*	35.5	52.17
Total Suspended Solids	35.81	82.26

*The quantitative analysis proved weak due the very small sample size of baseline data.

Habitat and macroinvertebrate sampling did not change over the six year period with the exception of site two which is in the treatment subwatershed. Site two actually dropped from marginal to poor for habitat and excellent to good for macroinvertebrates. The reason for this change was twofold. The ditch was dredged to remove sediment and horses were given direct access for an extended period. The situation has been remedied and it is anticipated the site will improve.

Concentrating BMP installation within a single subwatershed proved effective in pollution reduction. Although properly installed BMPs anywhere within a watershed will have some effect on improving water quality, a quantitatively significant reduction will only be achieved by concentrating installations within subwatersheds. In the case of the Little Elkhart River, starting installations in the headwaters subwatersheds and progressing downstream will have the most profound effect on measurable water quality improvement. A scientific journal article is under preparation for publication of the data accumulated and analyzed in this paired watershed study.

Education and outreach was also a large part of the project. A wide variety of presentations were made to various groups during this grant to educate them about watershed management plan, the water monitoring results, the cost-share projects, and how the project worked successfully with the Amish population. During the four years of this project the Pasture News newsletter was used to promote pasture walks held from April through November each year. These newsletters are distributed to over 600 people interested in rotational grazing. A total of 30 pasture walks were held to highlight the types of BMPs installed on the different properties. The project also was highlighted at 4 Northern Indiana Grazing Conferences during the grant term. Two water quality workshops were held in the watershed to educate the public about water quality issues within the St. Joseph River watershed, with great attendance at both of them.

Funding/Partnerships

The LaGrange County SWCD utilized $414,625 in Section 319 funds and provided $156,157 in match for the project. Partnerships, whether formal or informal, were a key component in this project. Partnerships included technical assistance from USDA-NRCS, Indiana State Department of Agriculture, Indiana Fish and Wildlife Service, and Purdue Cooperative Extension Service; support from Friends of the St. Joseph River Association and Elkhart County SWCD; and informal partnerships with the producers

and stakeholders in the watershed which gave the SWCD the opportunity to elevate the level of cooperation in the community. Partners that also provided funding for work in the watershed included DNR with Lake and River Enhancement funding, and the Great Lakes Commission with a grant to observe the movement of livestock (cattle and horses) in and out of streams at two sites in the Little Elkhart River Watershed. The results of this study were significant showing that rock crossings and limited access have a huge impact on sedimentation and pollutants getting into the streams. The data gathered from this study, along with water monitoring data and BMP installation, will provide important information for use not only in LaGrange County, but across the state.

Future Activities

The SWCD received additional 319 grant funds in 2007 to add four 14-digit HUC watersheds to the Little Elkhart WMP and to continue implementation. These funds will be utilized for the same types of practices that were originally funded, including water monitoring. A Great Lakes Commission Grant for erosion control and sediment reduction also was received which provides funds for implementation in this same watershed, including some water monitoring quarterly for total suspended solids. The opportunity also arose for the SWCD to apply for and receive LARE funds to use for additional projects in the Little Elkhart River Watershed.

The SWCD will continue to pursue additional funds from grants and other sources, as they become available, to continue with the work that has been started in the watershed. Due to the success of this program LaGrange County Commissioners and Council are very aware of the impact that has been made across the watershed and continue to fund the SWCD program, even in hard economic times. Education and Outreach will continue to be a priority of the SWCD. Working with farmers, lake residents, homeowners along the rivers, local government, and all residents of LaGrange County will help ensure the future of not only LaGrange County, but of the entire St. Joseph River Watershed which drains to Lake Michigan.

For more information about the LaGrange County SWCD and the variety of conservation activities and partnerships they are involved in, see the article in the Indiana Association of Soil and Water Conservation Districts newsletter at: http://www.iaswcd.org/story/partners/lagrangecoswcd.html.

Project Recognitions

Individuals and watershed groups in Indiana work long and hard to improve water quality in their watersheds and educate others about nonpoint source pollution. It takes the efforts of many people, many of them volunteers, to achieve the goals of the group and their watershed management plan. Most of the time, these efforts go unrecognized. Sometimes, however, an individual or a group will receive recognition for their efforts and achievements. This year, one Indiana group was recognized by EPA for their volunteer monitoring efforts.

EPA Region 5 Volunteer Monitoring Success Story

(Story taken from the *Region 5 Water Quality Monitoring Newsletter*, Volume 2, Issue 1, March 2011)

At a time when state water monitoring agencies are looking for ways to collect more watershed-scale data with fewer re-sources, local volunteers may offer an in-expensive way to make state ends meet. Volunteers are a natural resource for watershed-scale monitoring projects given their local residence and vested interest in the water quality condition of local water-bodies.

In western Indiana, the Wabash River Enhancement Corporation and Purdue University have demonstrated one novel approach to using volunteers to identify water quality problems by implementing the Wabash Sampling Blitz. The idea behind the event is to collect data at a large number of sites, providing a "snapshot" of water quality conditions at a given time. The idea for the sampling blitz emerged from the concerns of watershed stakeholders that water quality was poor within the Wabash River and its tributaries, and that monitoring was needed to identify specific problem "hotspots" within the 475 square mile watershed. While this snapshot approach is not designed to show how conditions vary temporally, it can provide a basis for comparing waterbodies spatially, given that all streams are sampled concurrently. Once problem areas are identified, the data can then be used as a baseline against which more intensive, targeted sampling data may be compared.

The initial blitz occurred within a two-hour period on September 18, 2009, when samples were collected at 210 sites, and volunteers then analyzed samples for temperature, pH, orthophosphate, nitrate and nitrite nitrogen, and copper. Volunteers also filtered water samples for lab analysis of ammonia, nitrate-nitrite, orthophosphate, and organic carbon. In addition, E. coli was sampled at a subset of sites. The blitz has since been repeated on April 9, 2010, and September 17, 2010, and now includes analysis of turbidity using turbidity tubes, and fish community assessment at a subset of stream sample sites.

This project is supported with a Section 319 grant and is designed to provide education and outreach to local citizens and other stakeholders. There are many benefits to cultivating awareness at the local level through direct participation in this type of project. IDEM's Betty Ratcliff states: "My view is that the project promotes volunteers getting involved in their watershed. It helps with decisions on targeting Best Management Practice installations, and it helps in convincing farmers to participate in changing their farming practices." The data will be submitted to IDEM during its water quality review, thus providing the agency with a unique spatial dataset that is difficult for even a large state agency to collect.

According to Sara Peel, Watershed Project Coordinator with WREC, the intent is to continue with twice per year blitz sampling as long as funding is available. The public response has been terrific, says Sara: “We've started to generate a lot of interest from schools and school groups to participate in the effort as it is directly applicable to their classroom work and allows their students to gain real world experience. We've also seen an increase in interest from individuals and the local news - as our exposure increases, we've observed an increase in public participation. Interest from Purdue University and Ivy Tech students also continues to be high.”

The Wabash Sampling Blitz is a great ex-ample of how local citizens can be meaningfully involved in local watershed planning and protection efforts. For its efforts WREC has been nominated for recognition as an EPA Region 5 “Volunteer Monitoring Success Story”.

For more information, visit the WREC website at www.wabashriver.net/wabash-sampling-blitz or contact Sara Peel, Coordinator of Watershed Projects, at speel@lafayette.in.gov.

Nonpoint Source Success Story

Section 319 Nonpoint Source Success Stories are stories gathered by EPA about nonpoint source-impaired waterbodies where restoration efforts have led to documented water quality improvements. Many stories are about waterbodies that have achieved water quality standards for one or more pollutants and/or designated uses after having been previously included on the state's 303(d) list of impaired waters. This is one of Indiana's such stories:

Lower Clifty Creek - Using a Watershed Approach Reduces Creek's Bacteria Levels

(Story taken from the EPA web site: http://water.epa.gov/polwaste/nps/success319/in_lowerclifty.cfm.)

High levels of bacteria from livestock manure, leaking and failing septic systems, and wildlife caused a segment of lower Clifty Creek to violate water quality standards. As a result, the Indiana Department of Environmental Management (IDEM) added an 8.12-mile-long segment of lower Clifty Creek to Indiana's 2002 Clean Water Act (CWA) section 303(d) list of impaired waters for *Escherichia coli* bacteria. Using CWA section 319 funds, project partners educated stakeholders about sound agricultural management and installed best management practices (BMPs) throughout the watershed. Data show that the lower Clifty Creek segment now meets water quality standards for bacteria, prompting IDEM to propose removing the segment from the state's 2010 CWA section 303(d) list of impaired waters.

Problem

Lower Clifty Creek flows through south-central Indiana in Bartholomew County, just southeast of Columbus. Agriculture is the watershed's primary land use. Two small streams, Sloan Branch and an unnamed tributary from Suhre Lake, contribute flow to Clifty Creek, which in turn empties into the East Fork White River.

In 2002 IDEM assessed waterbodies in south-central Indiana to identify which were impaired for bacteria and would require a total maximum daily load (TMDL) report. Samples collected on lower Clifty Creek had levels of *E. coli* that exceeded both the single sample and geometric mean water quality standards for bacteria, prompting IDEM to add an 8.12-mile-long segment to the 2002 CWA section 303(d) list of impaired waters.

IDEM identified nonpoint source runoff as the main contributor of *E. coli*. Key bacteria sources in the watershed include manure spread on pastures and crops, livestock, leaking and failing septic systems, and wildlife. Potential point sources of *E. coli* in the basins include three small community wastewater treatment plants; however, the plants have no history of violations, further supporting IDEM's assertion that nonpoint sources caused the *E. coli* impairments in lower Clifty Creek.

Project Highlights

IDEM used CWA section 319 funds to support three projects in the greater Clifty Creek watershed between 2003 and 2009. Watershed stakeholders worked with local and state agencies to develop a comprehensive watershed management plan, identify critical areas and needed actions, and target resources necessary to install BMPs designed to improve water quality.

Landowners implemented BMPs on almost 10 percent of the surface area of the Lower Clifty Creek subwatershed. BMPs include adopting prescribed grazing, planting pasture and hayland areas, adding heavy use area protection for livestock, adopting residue management using no-till and green manure crop cover, installing alternate watering facilities, and excluding livestock from stream using fencing and stream crossings. In addition, several farmers developed and implemented nutrient management plans for their operations.

The Natural Resources Conservation Service (NRCS), working with SWCDs and the watershed project, provided general technical support to producers managing more than 106,000 acres in the larger Clifty Creek watershed from 2003 through 2009. Additionally, NRCS's Environmental Quality Incentives Program (EQIP) supported water quality improvement projects on 46,729 acres, which included nutrient management plans covering 15,562 acres, pest management plans for 13,701 acres, and 8,745 acres of residue management. Also, farmers used NRCS's Conservation Reserve Program (CRP) to create 54 acres of riparian zones, 185 acres of grassed waterways, and 152 acres in filter strips.

Results

IDEM reassessed the water quality in the larger Clifty Creek watershed in 2007. Data show that bacteria levels dropped in the creek and that a TMDL was no longer needed. The geometric mean of five samples collected in 2007 was 67.58 most probable number (MPN) *E. coli* colonies per 100 milliliters—well below the water quality standard, which requires *E. coli* levels to be less than 125 MPN. The 2007 data show that *E. coli* levels have dropped by 67 percent when compared to data collected in 2002 (the geometric mean in 2002 was 205 MPN). Furthermore, data collected by the U.S. Geological Survey at a fixed station site in the watershed in 2007 support the conclusion that the lower creek segment meets the bacteria water quality standard. On the basis of that information, IDEM has proposed to remove the 8.12-mile segment of Clifty Creek from the 2010 CWA section 303(d) list of impaired waters.

Partners and Funding

The Bartholomew County Soil and Water Conservation District (SWCD) worked closely with the Decatur County SWCD, the NRCS regional conservation staff, and a number of local and state partners including the Indiana Department of Natural Resources; Indiana State Department of Agriculture; Hope Hardwoods; Bartholomew County Cattleman's Association; Strand Associates; Bartholomew County and Decatur County health departments; kidsCommons Children's Museum; Hoosier River Watch; Indiana Project WET; Southside, Rockcreek and LF Smith Elementary Schools; Columbus East High School; Sand Creek Watershed Project; Friends of the Muscatatuck River Society; Indiana-Purdue University Columbus; and Columbus City Utilities. Partners contributed resources to support education and outreach to stakeholders, water quality monitoring, and technical support for installing BMPs.

Considerable funds and technical resources have been focused within the larger Clifty Creek watershed. The Bartholomew County SWCD used $1,088,175 in CWA section 319 grant funds (with an additional $532,742 contributed as local match) to support the 2003 project to develop the Clifty Creek Watershed Plan. These funds also supported projects in 2005 and 2007 to implement the plan by installing BMPs,

coordinating with other partners' water quality improvement activities, and performing outreach and education activities.

The Decatur County SWCD received $70,000 in Clean Water Indiana grants and approximately $18,000 in Emergency Conservation Assistance Program grants from the Indiana State Department of Agriculture for water quality improvement projects. The Bartholomew County SWCD received $70,000 in Clean Water Indiana grants and approximately $87,400 in Emergency Conservation Assistance Program grants for similar projects. The NRCS worked with the SWCDs and other partners to help landowners implement BMPs using EQIP and CRP funds.

WORKING TO IMPROVE THE NONPOINT SOURCE PROGRAM

IDEM's Nonpoint Source Program is actively working to expand state resources devoted to addressing nonpoint source pollution, develop planning and assessment tools to better gauge the effect of grant-funded projects, and fund projects to build watershed planning capacity within the state. This section of the report details efforts undertaken during this reporting period that will increase the effectiveness of the Nonpoint Source Program in Indiana.

Continued Reorganization

As reported in the FFY 2010 NPS Annual Report, IDEM realigned its programs in 2010 to better integrate its assessment and planning and restoration grant functions. In FFY 2011, IDEM continued to reorganize the Watershed Assessment and Planning Branch to gain efficiencies in water quality improvement.

Watershed Planning and Restoration Section

In early 2011, IDEM continued its reorganization of the Watershed Assessment and Planning Branch by forming four new sections to contain its water monitoring, Nonpoint Source, TMDL, and Watershed Specialist programs (see Appendix G). The Nonpoint Source, TMDL, and Watershed Specialist programs have been combined into a new section entitled the Watershed Planning and Restoration Section. This section is responsible for administering the §205(j) and 319(h) grant programs, calculating TMDLs and writing TMDL reports, providing technical assistance to watershed efforts throughout the state, and conducting statewide planning for watershed restoration. IDEM believes that the functionalities combined in this new section will provide greater efficiencies and less redundancy in our work to reduce nonpoint source pollution.

Data Interpretation Role Added

One challenge that Indiana watershed groups have continually faced is a lack of technical expertise to interpret monitoring data that has been collected both by the groups themselves, as well as data collected by other entities. In response to this need, IDEM has utilized some of its 319 administrative dollars to add a data interpretation specialist position to the Watershed Assessment and Planning Branch. This person is charged with analyzing existing and new data to meet multiple water quality management needs including development of nutrient criteria and new biological indices, and to explore and implement new methods for trend analyses. In support of water quality standards nutrient criteria creation, the data interpretation specialist will perform algae identification and enumeration, microcystin analysis, and will function as the diatom expert within the Watershed Assessment and Planning Branch. Perhaps the function most directly related to watershed groups is the position's responsibility for analyzing and interpreting data collected by IDEM for the NPS baseline monitoring projects to support local watershed groups in their planning efforts, and for working to ensure that watershed groups understand how the results may be incorporated into their watershed plans.

Water Quality Monitoring Strategy

In 2009, IDEM submitted to US EPA a nonpoint source monitoring strategy for Indiana. This strategy was aimed at collecting and analyzing data in a manner that enables IDEM to target limited resources for watershed planning purposes and to ascertain changes in water quality resulting from different OWQ program activities such as watershed planning and restoration activities funded through Nonpoint Source Section 319(h) and 205(j) grants, and TMDL development and implementation. In October 2010, IDEM began a series of meetings to revise its overall Water Quality Monitoring Strategy for surface and ground waters. The need to fully incorporate nonpoint source monitoring activities into the plan was wholly recognized by the committee. As a result, IDEM changed its probabilistic surface water quality monitoring strategy from a 5-year rotating basins approach to a 9-year rotating basins approach to free up resources for more targeted nonpoint source monitoring. The 2011 sampling season is the first season under this new Water Quality Monitoring Strategy.

The Office of Water Quality assesses the quality of Indiana's waters using a rotating basin approach. One major basin is assessed for support of aquatic life, fishing and recreational uses each year. The monitoring program is designed to characterize the overall environmental quality of each major river basin and to identify those monitored waterbodies within each basin that are not fully supporting their designated uses. The results are reported in the Indiana Integrated Water Monitoring and Assessment Report, published every two years.

IDEM's Rotating Basin Monitoring, Assessment, Reporting and Listing Schedule

Waters that do not fully support one or more of their designated beneficial uses are placed on the Indiana's 303(d) List of Impaired Waters, which may be viewed at: http://www.in.gov/idem/4680.htm

Targeted Monitoring for Success (MeasureW/SP-12 and Success Stories/WQ-10)

Part of the US EPA's strategy for showing improvement in nonpoint source pollution impairment is through Measure W and Success stories submissions by the States. In order to show improvement, states must show that:

1) One or more of the waterbody/impairment causes identified in 2002 are removed, as reflected in EPA-approved state assessments, for at least 40% of the impaired water bodies or impaired stream miles/lake acres in the watershed; OR

2) There is a significant watershed-wide improvement, as demonstrated by valid scientific information, in one or more water quality parameters or relate indicators associated impairments.

IDEM has chosen to use delistings (Option 1 above) as the mechanism for demonstrating water quality improvement to U.S. EPA. Targeted monitoring to measure water quality improvement as a result of nonpoint source grants was initiated in 2009 as a component of the Surveys Section Source ID studies in the Upper Eel River watershed. Monitoring for success continued this period in the South Fork Wildcat Creek, Little Elkhart River, Indian Creek, Laughery Creek, Allen Branch, and South Hogan/Whitaker Creek watersheds.

Baseline Monitoring Pilot Study – Plummer Creek

Many watershed groups in Indiana lack the expertise to set up and use equipment to conduct a monitoring program that will provide complete baseline data for their watershed management plans. Also, in order to meet the data quality objective of delisting, IDEM needs to have a scientifically-defensible baseline to compare with follow-up monitoring. As a step toward meeting these two needs, IDEM is pursuing a one-year pilot project in 2011-2012 to collect baseline data for one watershed group that has applied for watershed planning funds through the 319 grant program.

The pilot project is being conducted in the Plummer Creek watershed (HUC 0512020203), a 10-digit watershed in the larger Wabash River basin in west-central Indiana. Grab samples will be collected at 32 surface water sampling locations for *E. coli* and nutrients (ammonia nitrogen, total phosphorus, TKN, nitrate+nitrite,) and total solids (suspended and dissolved) analysis. Field measurements (pH, DO, temperature, turbidity, and specific conductance) will be conducted at each site during each sampling event. Visual field observations will include weather conditions, stream conditions, and percent stream canopy at each sampling location. All samples collected will be analyzed for *E. coli* using the Idexx Colilert Enzyme Substrate Standard Method SM -9223B (Clesceri et al., 1998). Surface water samples will be collected monthly for nutrient parameters (ammonia nitrogen, total phosphorus, TKN, nitrate+nitrite,) and total solids (suspended and dissolved)) and processed and analyzed according to predetermined analytical methods by the Indiana State Department of Health (ISDH) laboratory. Stream discharge also will be measured or estimated monthly at selected sites to determine total stream loadings.

Sample sites were chosen using a geometric site selection process in order to get the necessary spatial representation of the entire study area. Sites were selected based on a geometric progression of drainage areas starting with the area at the mouth of the mainstem stream and working upstream through the tributaries to the headwaters (sites ≥ 5 square miles). Monitoring sites were then "snapped" to the nearest bridge. Baseline monitoring is an intensive targeted watershed design that characterizes the current condition of a watershed. This type of monitoring provides valuable data for the purposes of watershed planning and which allows for future comparisons to evaluate changes in the water quality within the watershed(s) studied. Selecting a spatial monitoring design with sufficient sampling density to accurately characterize water quality conditions is a critical step in the process of developing an adequate local scale watershed study.

It is anticipated that the water quality data collected through this monitoring will provide the information that local water quality managers need to characterize the watershed, identify sources of impairment, and designate critical areas for their watershed management plan enabling them to make valid and informed watershed management decisions.

Program Website Update

Nonpoint source pollution is Indiana's most significant water quality challenge. The Indiana Department of Environmental Management (IDEM) initiated its Nonpoint Source Project to improve communication with, and between, IDEM, Indiana's local governments and groups, and individuals about impacts and efforts to address impacts from nonpoint source pollution.

IDEM's goals in bringing people in and bringing people together were to 1) build an infrastructure to provide information and user-centered tools for individuals, local governments and local groups who want to know more about, or get involved in, nonpoint source pollution prevention and 2) provide itself (IDEM) with the capacity to continue expanding and enhancing the information and services available for customers.

IDEM achieved its goals by redesigning its existing website and adding new content, tools, training aids, promotional outreach and educational displays to raise awareness of and benefit all stakeholders in all Indiana communities. IDEM exceeded project goals by establishing an infrastructure for the future expansion of online services and the in-house production of educational materials at a tremendous cost savings that will carry over into future projects as the agency continues to build on the services and tools it has developed using the grant funds. The project was completed in a three-phase approach. The first phase focused on website redesign and expansion of the agency's capacity for the production of online services and educational materials. Phase two focused on the standardization of reports and the development of outreach materials and promotional items, including web-based brochures, guides, short videos on storm water, septic maintenance, watershed planning, and best management practices. Phase three included development of advertising pieces, such as PSAs, and the development of displays that staff can take to festivals, workshops and conferences to educate the public about nonpoint source pollution.

Key accomplishments of the web project include:

- **Expanded capacity for in-house production of educational materials**
  The purchase of equipment and software listed in Phase I, along with training for staff members with approximately 10 to 15 years of graphic design listed in Phase II, helped build an infrastructure and a stronger foundation of knowledge. The improved infrastructure will allow for the in house production of produce public service announcements and instructional videos to support the nonpoint source pollution program. Overall production costs will be less in comparison with costs for contractors. For example, IDEM will produce seven videos in-house for the Nonpoint Source Project. A savings of as much as $18,000 per video can be realized by producing these videos in house when compared with typical prices for a contractor, for a total savings of up to $126,000.

- **Developed new outreach materials and delivery mechanisms, including social media tools, with the capacity for expanding on the technology**
  IDEM's Nonpoint Source Project set up an infrastructure with social media capabilities and tools. The selected contractor worked with the agency-staff to develop the social media site www.hoosierscare.org. This site allowed users who encounter agency educational displays, materials or ads to have further access to content-rich interaction with the agency and water professionals from across the state. The contractor provided training to staff on how to manage the developed sites, as well as develop additional tools that might be incorporated into the site. The social media tools include special content pages for watershed groups, discussion threads, professionals' information exchanges, and video players. The site works with the Nonpoint Source Web pages, but resides on the contractor's server. IDEM's Nonpoint Source Project set up an infrastructure with SMS texting capabilities through a contract. This system is allowing users that encounter agency educational display materials or ads to use their cell phones to sign up for more information. This system is working with the agency's existing Web pages and subscription services to capture user information and automatically place the user into a subscriber system that give the agency the opportunity to continue highly –targeted outreach well after the initial contact. The system integrates with the IN.gov presence and meets IOT standards. IDEM's Nonpoint Source Project also set up an on demand delivery system with seven brochure templates available to water community groups (MS4s, watershed groups, 319 grantees) through a contract. The contractor worked with the agency to make the templates available online. Supplementing customizable materials of non-point source pollution basic knowledge to watershed stakeholders and citizens helps to exchange information and promotes community ownership of the Nonpoint Source program at the local level.

- **Developed clearer communication with stakeholders about impacts and efforts to reduce Nonpoint Source pollution. Implemented Web 2.0, including the ability to link communities and individuals into meetings via the web**
  Web-based mechanisms that are moderated through the IDEM Nonpoint Source Section increased the capacity for hosting large groups for training, discussion and information sessions via existing Web-enabled system.

A final report, prepared by the Office of Media and Communication Services, describes work accomplished in greater detail.

Enhancing Databases

Assessment Information Management System (AIMS)

The Nonpoint Source Program used funds to build onto and improve the existing water quality database management system, AIMS, currently used by the Watershed Assessment and Planning Branch in IDEM, to provide a mechanism to enter 319(h)-funded water quality data into EPA's Storage and Retrieval System (STORET). The existing AIMS application handles data from multiple water quality and aquatic biota programs and was expanded to include the programs, projects, and data collected through the nonpoint source and water quality grants. The improvements incorporated web browser access for staff and management and enhanced STORET interface capabilities to benefit all water quality programs in

meeting federal mandates for this program and the agency's other water quality monitoring programs. Additionally, the query and analysis tools available in AIMS are helping in the evaluation of the data through statistical and GIS applications and will be integrated with the Watershed Assessment and Planning Branch point and nonpoint source monitoring data for further program analyses.

The project is complete and underwent a one-year maintenance period which included further enhancements.

IDNR Hoosier Riverwatch Volunteer Monitoring Program

IDEM partnered with the IDNR Hoosier Riverwatch Program and the Upper White River Watershed Alliance (UWRWA) to improve access to and utility of Hoosier Riverwatch data by local leaders, volunteers and other data users. This project included upgrading the web-enabled Hoosier Riverwatch Database to allow all current and historic Hoosier Riverwatch sampling sites and data to be consistently entered and stored for data sharing, geospatial and statistical analyses, and reporting. The UWRWA constructed an appropriate US EPA Water Quality Exchange (WQX - formerly STORET) compliant dataflow to enable data submittal, utilizing a State-provided Node Client, from the database to the State Node. Five statewide workshops were conducted to assist in the technical interpretation of local data and increase the particpants' understanding of chemical, physical, and biological inter-relationships. These enhancements will render the existing data more useful and improve the quality of data entry by the data collectors. This project is complete.

Development and Demonstration of Outcome-Based Evaluation Framework for Indiana Nonpoint Source Program

In 2006 and 2008, Section 319 grants were awarded to Purdue University for a two-phase project to develop indicator frameworks to assess the social and environmental outcomes of watershed planning and implementation projects. Monitoring social outcomes of watershed planning and implementation such as changes in knowledge, attitudes, and behavior of watershed residents and stakeholders is a new process to many community-based watershed groups. Environmental outcomes focus on the effect of implemented management practices on water quality, and although many watershed groups had previously attempted to design management plans to show change in environmental outcomes, few have been able to complete their goal successfully. An additional goal is to provide a consistent framework and methods so that impacts could be aggregated statewide.

Accomplishments

Purdue compiled information from (1) a series of workshops and surveys with expert panel participants from federal, state, and local agencies, academia, watershed organizations, consulting firms, and non-governmental organizations, (2) monitoring protocols obtained from statewide monitoring programs, and (3) more than 41 watershed management plans and other 319 project reports. The information provided in this compilation, plus additional consideration including feasibility and cost of indicator collection and whether volunteers can measure indicators beyond a funded project, was assessed to

determine the core indicators that IDEM will collect from any watershed group funded to collect environmental data.

Based on this assessment, Purdue worked collaboratively with the Indiana Department of Environmental Management (IDEM) staff to name 8 core indicators that will be used by 319 projects collecting environmental data to measure success of watershed management activities.

In addition, using the list of 27 potential environmental indicators, Purdue drafted the Environmental Indicator Manual. For each indicator, information was provided on:

- What the indicator is
- What the indicator indicates and sources that cause it, if applicable
- Who is monitoring the selected parameter in Indiana and the methods used
- A methods overview including scoring and metric explanations, if applicable
- Typical levels in Indiana, if available
- Protective levels including Water Quality Standards, if applicable
- Resources needed (equipment, time, expertise and approximate costs)

The draft indicator manual was initially reviewed by IDEM staff and comments were incorporated. Once completed, Purdue will provide the final draft version of the manual to the original expert panel for their review and comments.

Core indicators include:

1. Temperature
2. Dissolved oxygen
3. Total phosphorus (other forms of phosphorus are supplemental)
4. Nitrate+nitrite
5. pH
6. flow
7. Qualitative Habitat Evaluation Index (QHEI)
8. Sediment measure (Suspended Sediment Concentration/Total Suspended Sediments/Turbidity)

In collaboration with the Indiana Water Monitoring Council, Purdue developed three products to help identify what parameters are being measured by who in Indiana, also linking the methods used for collection and analysis by watershed groups and agencies in Indiana, including:

- ***Catalog of Monitoring Protocols Used by Indiana Agencies*** – a compilation of existing protocols used by statewide monitoring programs,
- ***Inventory of Who is Monitoring What in Indiana*** – a companion tool that identifies the statewide program collecting the environmental indicator, where it is collected, general measurement information, the frequency and seasonality of sampling, and the sampling location, and
- ***Indiana Water Monitoring Inventory*** – a central hub for locating water monitoring information (where and what is being monitored) in the state of Indiana.

Purdue has worked to keep these public web spaces up to date with current methods, sampling information, and protocol stewards.

To complete the social indicators framework, Purdue has worked with land grant universities in five other states in the Great Lakes region, the USDA NIFA Great Lakes Regional Water Program and U.S. EPA to develop and fine tune key indicators, data collection methodologies, and support materials to help future groups collect social information. The work is in the final stages of the pilot phase, which started in 2007, that aimed to test and revise the Social Indicators Planning and Evaluation System (SIPES), developed by the social indicators team.

Of the 29 pilot projects in the six different states, 10 were located in Indiana. Agricultural and urban residents were surveyed in seven of these pilot watersheds, and urban audiences were surveyed in the other three. Many of these surveys took place within the past year. Purdue had the ability to resurvey four of the Indiana pilot watersheds to determine similarities and differences in the key indicators over the course of the pilot project. Another accomplishment in the past year has been the updating and improvement of the Social Indicator Data Management and Analysis (SIDMA) web-based tool. Based on user feedback, SIDMA 3.0 has incorporated the ability to; generate project-specific questions, calculate basic statistics on the data, download surveys into Microsoft Word for easy printing and mailing, produce a pubic URL for each survey allowing for online delivery, and make additional changes as needed using administrative functions.

Future Activities

Purdue continues to work with IDEM staff to develop the final version of the Environmental Indicator Manual that will explain how to use the environmental indicators effectively. In addition, Purdue will provide training to agency staff on how to use the manual and provide technical assistance to watershed groups who are collecting environmental data to measure success of watershed management activities. The SIPES Handbook will be revised to reflect changes to SIPES and SIDMA from the pilot phase. One final post survey (St. Mary's watershed) also will be conducted. Purdue will provide training to IDEM staff as requested on using SIPES.

Total Maximum Daily Load Program

Under the federal Clean Water Act (CWA) Section 303(d), development of TMDLs is required for all the impaired waterbodies that do not meet the water quality standards (WQS) for the designated uses to protect aquatic life, wildlife, and human health. The Nonpoint Source Program and the TMDL Program continue to work together to facilitate the integration of watershed management planning and implementation with the development of TMDLs and their implementation. The Section 319(h) Program priorities are developed in cooperation with the TMDL program in order to achieve the goals of both programs in the most efficient and cost-effective manner.

TMDL staff and Section 319(h) staff attend watershed meetings together and match watershed groups to grant funding and data resources. Section 319(h)-funded project sponsors are often key stakeholders in the development of TMDLs and provide data, meeting spaces, and stakeholder lists which have greatly improved the quality of TMDL reports. The development of TMDLs has, in some cases, spurred the development of new watershed groups – thirteen new watershed groups have been formed as the result of a TMDL (and were funded with 319(h) grants to continue the work started by the TMDL) and several watersheds where TMDLs were completed had 319(h)-funded watershed groups already

established. TMDL staff has even worked with watershed groups to assist in the development of implementation projects designed to help meet load reductions stated in the TMDL report.

Indiana is divided into 1586 twelve digit watersheds and approximately 781 of these watersheds have TMDLs developed or scheduled to be developed by the end of 2011. This translates to 1141 TMDLs and of these, 32% are in various stages of implementation. TMDLs have primarily focused on *E. coli*, but recent TMDLs have been developed that quantify the impacts of nutrients and metals on waters with impaired biotic communities.

TMDL Template

In 2010, IDEM began working with TetraTech, a nationwide consulting firm, to create a Total Maximum Daily Load (TMDL) template that will meet the requirements of an approvable TMDL and meet the required 9 Minimum Elements of a Watershed Management Plan. The vision of this project is that a template could be developed so that future TMDLs could approximate a watershed management plan that meets the 9 Key Elements for Watershed Management Plans. This project started on March 4, 2010 and will end on September 3, 2011.

IDEM and Tetra Tech worked together to review the TMDL requirements and the Watershed Plan requirements and developed an Integrated Matrix and user overview to document where and how each requirement will be met. There are some watershed plan requirements that cannot easily be met through the TMDL template, but there are recommendations on how a TMDL writer or watershed group can go above and beyond the TMDL requirements to meet the watershed plan checklist. For example, at the minimum level, TMDLs are not required to address or relate back to the stakeholder concerns. Therefore, in the matrix, the watershed plan checklist elements related to stakeholder concerns, like #1 community rationale for the project and #3 stakeholder concerns, were identified as NOT COMPLETE. However, some instructions on how the TMDL writer could make the elements partially complete or fully complete were included. One suggestion to getting the stakeholder concerns element complete would be to obtain stakeholder concerns from a watershed group and document in the TMDL to help tie other pieces of the analysis to stakeholder concerns.

Once this matrix was established, Tetra Tech began drafting sections of the TMDL Template. An internal work group reviewed draft sections over time, as well as reviewing the completed drafts. Additionally, comments and concerns were solicited from IDEM programs whose information is typically included in the TMDL documents. All TMDL documents that begin in FFY 2012 will use the new template.

Capacity Building to Reduce Nonpoint Source Pollution

IDEM is continually seeking ways to build capacity around the state in an effort to strengthen the effectiveness of groups working to achieve water quality goals and show measurable results. The objective is to promote the organizational development and growth of local watershed partnerships and stakeholders committed to improving and maintaining the natural and economic resources of their watersheds; and to provide funding, training, and technical assistance to these groups so they can better address watershed-based problems and help develop sustainable solutions. Following are examples of

IDEM working with partners and using Section 319(h) funds to help build capacity statewide and at the local level to reduce nonpoint source pollution in the state.

Watershed Specialists

The Watershed Specialists (WSS) continue to work according to their Strategic Plan, emphasizing the provision of financial, organizational and technical assistance to local watershed efforts. Key accomplishments are given below.

Capacity Building for Watershed Groups

The primary focus of the WSS positions is to assist local watershed groups with becoming successful and sustainable. To this end, WSS assisted approximately 100 active and developing watershed projects, sponsored by watershed groups, SWCDs and other entities on many levels including: meeting facilitation, reviewing draft and final watershed management plans, developing and reviewing grant proposals from several funding programs, obtaining water quality data and developing watershed maps, connecting groups with other local organizations and agencies to complement planning efforts, and assisting watershed coordinators with the overall watershed planning and implementation processes. This work includes helping groups move beyond dependence on 319(h) funding and integrating with local comprehensive plans. In addition, they have worked with large watershed basin partnerships to promote integration and prioritization of local, smaller scale watershed efforts.

The WSS initiated conversations with other members of the Indiana Conservation Partnership to better coordinate and streamline watershed-related training and networking opportunities to enhance the service provided to watershed efforts in Indiana. This collaboration resulted in the following trainings being provided to watershed leaders in Indiana:

- Three Watershed Networking Sessions (December 2010) in North Liberty, Indianapolis, and Mitchell on the topic "**Seeking Grants to Meet Your Goals and Leveraging Funding Sources**." Presentations were given by the Indiana Association of Soil and Water Conservation Districts, the Natural Resources Conservation Service, successful local watershed groups, and the IDEM WSS on topic such as 1) grant-seeking preparedness; 2) developing relationships with grantors; 3) funding testimonial from local watershed group; and 4) specific state and federal funding opportunities for watershed work. In attendance were 83 watershed leaders, including representatives from lake associations, soil and water conservation districts, consulting firms, nonprofit watershed groups, MS4s, and state and federal agencies.

- One Watershed Networking Session (March 2011) entitled **"Water Words that Work,"** presented by an environmental marketing firm of the same name. This session was made possible by through the initiative of the Indiana Lakes Management Society, who had taken steps to bring the speaker in for their conference in northeastern Indiana. This provided an opportunity for IDEM and other Indiana Conservation Partners to extend an invitation to the speaker to commit an extra day in Indiana to speak to a wider audience. The session was held in the central Indiana Town of Zionsville with logistical support provided by the Upper White River Watershed Alliance, Eagle Creek Watershed

Alliance, and Zionsville Stormwater Department. A total of 67 participants were in attendance at this event. Specific topics addressed were environmental attitudes of non-environmental professionals; creating an effective message; and delivering the message. The information provided had been tested against a focus group of 25 citizens. Attendees at this session included watershed coordinators and leaders, MS4 coordinators, Soil and Water Conservation Districts, state agency representatives, consultants, and nonprofits. Numerous positive comments were received, with more than one request to bring the speaker back to Indiana.

- One webinar (March 2011) hosted by Purdue University's Watershed Leadership Program on the topic of **how to determine critical areas during the development of watershed management plans**. IDEM WSS and Nonpoint Source program members coordinated with the presenters to ensure that advice provided during the webinar was consistent with IDEM expectations and policy. Speakers included an active watershed group member and professor at Purdue University, as well as two former local coordinators who had taken different approaches to identifying critical areas in plans that were ultimately approved by IDEM. The webinar was recorded and has been archived at https://engineering.purdue.edu/~iwla/webinars/IWLA2011/CriticalAreas/index.html. Approximately 40 people attended the live broadcast of the webinar.

- One webinar (June 2011) hosted by Purdue University's Watershed Leadership Program on the topic **"Wellhead/Source Water Protection and How It Interfaces with Watershed/Nonpoint Source Management Plans."** Speakers for this presentation were a WSS and a Senior Environmental Manager from IDEM's Drinking Water Branch. While live attendance was somewhat low (6 participants), the webinar was recorded and archived at https://engineering.purdue.edu/~iwla/webinars/IWLA2011/Wellhead/ for future viewing.

In addition to the above, Watershed Specialists also were invited to participate in the planning and conducting of the 2011 Indiana Association of Soil and Water Conservation Districts. Watershed Specialists facilitated round table discussions on 1) the 319 grant program and 2) septic system issues with the Indiana State Department of Health. Watershed Specialists also moderated presentations on drainage water management, using social indicators to promote best management practice adoption, and blue-green algae in Indiana. An additional session on basic fluvial geomorphology was suggested by IDEM, which made it on the conference agenda and was very well-received, with requests for another session in the same vein for the upcoming year.

The WSS continued to assist Purdue University with the Indiana Watershed Leadership Academy by sitting on their steering committee, reviewing participant assignments and providing feedback to participants, and attending their graduation and evaluating their class projects presented that day. Watershed Specialists also assist Purdue's webinar speakers by previewing webinar presentations several days beforehand and providing feedback to improve them before they are presented live.

The WSS continue to work with the new IASWCD Conservation Development Specialist to assist watershed groups and SWCDs in marketing and fundraising for their conservation needs. One project that came out of this year's work was an evaluation of statewide messaging on nonpoint source issues

and the possibility of developing a watershed/water quality/Soil and Water Conservation District awareness campaign with private funding.

Watershed Specialists continue to participate in the Indiana Conservation Partnership's Pathway to Water Quality advisory committee to improve this Indiana State Fair exhibit that reaches tens of thousands of Hoosiers each year.

Internal Program Coordination:

The WSS continued to work with other IDEM staff on joint projects to fulfill mutual goals, which included:

- Continued working with the Nonpoint Source and TMDL program staff on website content development and development of nonpoint source monitoring and load calculation guidance for watershed groups
- Worked with others in the Watershed Assessment and Planning Branch to develop the Indiana Water Quality Monitoring Strategy 2011-2019
- Worked with IDEM Ground water staff to continue coordinating source water protection and watershed group efforts
- Continued to work with Watershed Assessment and Planning Branch staff on the External Data Framework

External Program Coordination:

The WSS work directly with partner agencies to help strengthen efforts to address nonpoint source pollution through a variety of other programs. This included:

- Assisted in coordinating watershed-related topics at the IASWCD annual conference and moderated several sessions
- Continued to coordinate with IDNR LARE staff on watershed planning and diagnostic study projects to meet 319(h) requirements in order to leverage funding and resources
- Attended the Indiana MS4 Annual Meeting to network with MS4 coordinators interested in watershed planning
- Continued promoting the Mitigation Matchmaker website developed by INDOT, IDNR, and IDEM.
- Worked with other agencies in the Indiana Conservation Partnership to continue developing a Training and Certification program for partner employees, including training in the design and implementation of best management practices for water quality improvement and a possible watershed coordinator certification program

Public Presentations/Outreach:

The WSS provided the following public presentations/outreach on watersheds and water quality:

- "MS4s and Watershed Groups: Coming Together," 2011 Indiana MS4 Annual Conference
- Watershed Specialist wrote article entitled "Sediment Loading: A Watershed Issue" for the March 2011 Indiana Lakes Management Society newsletter

- Watershed Specialists helped to staff the "Pathway to Water Quality" exhibit at the Indiana State Fair

Re-drawing of Service Areas and Transition to Project Management

The Watershed Specialist program underwent significant change this reporting period. Service areas of the WSS were redrawn to align with a reduced number of field staff (from 5 WSS in the field to 4). Two new WSS were hired to service the northeast and southwest areas, and the northwest area was combined with the coastal zone area. One watershed specialist was assigned to perform administrative and program coordination duties to more effectively align the Water Quality Standards, Integrated Reporting, TMDL, and Nonpoint Source program areas in order to more rapidly see improvements in water quality.

Reorganization of the Watershed Assessment and Planning Branch, along with the resignation of several staff, resulted in a net loss of project managers from the Nonpoint Source program during this reporting period. In order to mitigate for this loss, the Watershed Specialists have been assigned project management duties for 205(j) and 319(h) projects within their service areas.

Training and Outreach

Indiana Watershed Leadership Academy

IDEM is partnering with Purdue University and using Section 319(h) funds to conduct the Indiana Watershed Leadership Program to meet the needs of watershed coordinators, agency staff, and others that want to become more effective watershed leaders. Leading the development of a scientifically-sound watershed management plan that actively involves, engages, and is supported by the community requires people who have broad skills, and know how to employ diverse tools and strategies related to watershed management.

The Indiana Watershed Leadership Academy (IWLA) was developed in 2005 by Purdue University in collaboration with numerous conservation partners throughout the State. The Academy responds to the critical need to build watershed management capacity in Indiana, documented through a survey conducted by Purdue of watershed volunteers and professionals throughout Indiana (http://www.ces.purdue.edu/waterquality/Survey_Report.pdf).

Accomplishments

Purdue celebrated the conclusion of the sixth class of the Indiana Watershed Leadership Academy in May 2011. Twenty-nine participants from throughout Indiana with very diverse backgrounds including watershed coordinators, MS4 operators, students, private citizens, consultants, resource managers, city planner, county surveyor, and non-profit representatives convened in January 2011 to begin face to face workshops and

distance education on becoming more effective watershed leaders. Those who completed all components of the program received a Professional Certificate in Watershed Management.
Over the course of the 2011 Academy, we had many notable achievements including;

- Module assignment review – approximately 200 assignments are completed and reviewed by alumni each year. These modules focus on topics known to be important to watershed coordinators in effective planning.

- Web meetings – Purdue used innovative web conferencing technologies to keep participants in touch. Each participant received a webcam and met online every other week to discuss any issues with the current assignment and to introduce the new learning module.

- Face-to-face workshops – we held three workshops that emphasize topics that people need such as water monitoring data interpretation, identifying critical areas, and selecting Best Management practices.

- Developing tools – as Purdue works with watershed groups they have focused efforts on tools to address needs. For example, the load calculation tool available at https://engineering.purdue.edu/~ldc/LOADEST/ and the HUC Finder available at http://inwater.agriculture.purdue.edu/HUC/.

Within the Indiana Watershed Leadership Program, Purdue began a monthly webinar series to build on the educational content provided during the Academy. This webinar series is available to Academy graduates and others throughout the state. The webinars are recorded providing on-demand 24/7 access. Webinar topics to date include:

- Identifying Critical Areas in Your Watershed
- Clean Water Act 101
- Wellhead/Source Water Protection and How It Interfaces with Watershed/Non Point Source Management Plans
- How to Talk to Strangers: Telling Your Story

Outcome-based evaluations each year have been used to enhance the content, improve the overall experience, and demonstrate the impact on watershed management. The Academy has received very strong evaluations from participants. When asked to provide specific comments regarding the overall Academy, participants indicated:

- "The Academy is constantly trying to stay current with new technology while educating participants on the tried and true. It is a valuable resource for getting all kinds of tools added to your tool belt."

- "A wide variety of backgrounds of the participants leads to exposure of a lot of interesting and different points of view and ideas."

- "Despite knowing a lot about watersheds in general, I was surprised to learn a whole lot in the Academy."

- "Networking. The reminder that you are not out there alone, being able to bounce ideas off of colleagues and share stories of successes & failures and learn from other's experiences."

In the past six years, 171 people have participated in the Academy, through which they have learned skills in organization and communication, watershed technology, GIS, policy, watershed science, and leadership.

Future Activities

The 2012 Indiana Watershed Leadership Academy face-to-face sessions are scheduled, and the application period will open in August 2011 (http://www.purdue.edu/watersheds). The Advisory Committee will continue to bring statewide input and support to the Academy. Due to the success and continued interest in this program, Purdue has been able to secure additional funding to maintain the Academy through 2013.

Networking Sessions

Networking Sessions conducted by IDEM's WSS focus on capacity building by not only teaching stakeholders about a specific topic, but also allowing them time to interact and learn from one another. The lessons shared and capacity gained simply through listening and talking with other watershed managers is an aspect of the Networking Sessions continually applauded by the participants. More information on the Networking Sessions held this year may be found under the "Watershed Specialists, Capacity Building for Watershed Groups**"** section of this report.

Indiana Conservation Partnership Training and Certification Program

In September 2009, IDEM participated with other members of the Indiana Conservation Partnership (ICP) in initiating a Training and Certification Program (TCP) to meet staff training and certification needs across the Partnership. During the past year, the ICP TCP has inventoried all Partnership staff (including IDEM Nonpoint Source staff and Soil and Water Conservation District-based Watershed Coordinators and watershed management plan implementation technicians) to identify the most pressing training needs and to prioritize trainings that will be offered in the near future as part of this program. The IDEM Nonpoint Source program hopes to gain the following benefits from the ICP TCP:

1) Training for program staff on best management practices that will make cost-share practices approval decisions more efficient;
2) Increase in number of District employees who are competent to plan for and design best management practices to meet the goals of Indiana's watershed management plans; and
3) Certification program for Watershed Coordinators that will result in increased recognition of these staff by their employers so that compensation is sufficient to decrease the level of turnover currently seen in these positions.

IASWCD Conservation Development Specialist

Restricted budgets, increased community size and ever-changing environmental risks place a significant burden on local Soil and Water Conservation Districts' (SWCDs) and watershed groups' resources. While SWCDs across Indiana are the core of soil and water conservation planning and initiatives; unfortunately, the most capable of watershed groups and SWCDs in Indiana are historically limited by a

lack of sustainable funding at their disposal to carry out district business plans and watershed management projects.

Disparity among district offices with the level of understanding, comfort and skills in funding and resource development (fundraising, grant writing, public support, marketing, public relations, collaborations, partnership-building, etc.); program development and implementation; leadership training and strategic planning, leave some districts at a substantial disadvantage with the completion of water quality management/implementation and business plans. Those districts and watershed groups with unfunded watershed management plans (WMP) would benefit from the capacity building tools and features proposed in the IASWCD's Nonpoint Source Section 319 Grant.

The IASWCD's established Conservation Development Specialist position 1) empowers watershed groups and SWCDs to seek out and leverage immediate and future funds to supplement and sustain clean water initiatives and watershed practices within Indiana's 92 counties; 2) assists, supports and/or connects IDEM 319 grant recipients with sustainable project funding and/or leveraging of current funds; 3) enhances capacity building through training and support in fund development and grant writing and tracking, (establish materials and procedures to document clean water initiative successes); 4) communicates the impact and value of clean water at the local levels; and 5) develops local and statewide support for the work and mission of SWCDs and watershed groups. This capacity building effort entails raising the level of awareness and the abilities of SWCDs and watershed groups to address issues related to nonpoint source pollution in an effective and efficient manner.

ISDA Technical Assistance

Many state and federal initiatives and programs are in place to reduce nonpoint source pollution in Indiana. However, a persistent obstacle to the installation of nonpoint source mitigating practices in Indiana has been a lack of man-power to “sell” and design best management practices for agricultural land. One initiative IDEM has been involved in to solve this problem is the Indiana Conservation Partnership’s Training and Certification Program, which is described above. However, this program is still in its infancy and a stop-gap measure is needed until the ICP TCP is consistently able to train additional technical staff. In response to this need, in 2010, IDEM funded a proposal from the Indiana State Department of Agriculture to hire 3 technical staff positions to serve in watersheds in the Wabash Basin with known water quality issues to implement state and federal agricultural programs aimed at reducing sediment and nutrient runoff to Indiana’s surface waters. As a result of this project, it is expected that there will be an increase in best management practices placed on the ground, resulting in an overall improvement in water quality.

Lessons Learned/Adaptive Management

Part of improvement and program development is taking time to evaluate existing processes and identify ways to do things better. For the Nonpoint Source Program, this involves getting input and lessons learned from our grantees, our staff who manage these projects, and our partners. Key lessons learned by our grant projects are passed along to other watershed groups by IDEM's Watershed Specialists and Nonpoint Source staff throughout the grant process.

Lessons Learned By Section 319(h) Grant Projects

A requirement of all Section 319(h) grant projects is to document project successes, failures, and lessons learned in their Final Report. This information serves three purposes. First, it helps the grantee improve and use this knowledge when planning for future work in the watershed. Second, it helps IDEM improve, where applicable, its processes and policies. Third, it allows other watershed groups to learn from the successes and failures of their peers. Following are excerpts from projects' final reports on their lessons learned:

About People and Partnerships

- Watershed management is mostly about people, the decisions they make, and their behavior.
- Communication, communication, communication! Communication and coordination with staff, board members, volunteers, partners, the media, donors, and stakeholders takes more time than you think – but must be a priority.
- Volunteers are awesome and must not be overlooked. Engaging stakeholders in a project gives them interest, pride, and stewardship for the project and our water resources.
- The Ag community was much harder to reach than the urban community. Identifying the cause of the less than enthusiastic response of the Ag community will take much more thought.
- One very important lesson was learned – patience! Especially when working with the Amish.
- There are incredible resources for watershed management in Indiana. In the course of planning for each Academy, we continued to find outstanding speakers to present relevant information to Academy participants.
- The more partnerships and contacts the projects has the more successful it will be – the more people you know or know you the easier it is to schedule workshops, obtain good speakers, and assist with other projects.
- Watershed management planning is all about the people! Their interest is fickle – meaning you can catch it with one activity or event but may not hold it for long. Using that interest to its fullest ability is necessary to successfully engage individuals long-term.
- Partnerships are required for long-term success and development of these partnerships takes time. Each partner has something they can offer to the planning and education process and finding that niche is important for both short and long-term successes in managing water quality. Likewise, we have something that we can offer each partner – finding that connection is a necessary part of each partnership.
- Volunteers make or break a project. Our successes during this project really hinge on

volunteer input of both knowledge and time. Without their efforts, our plan would be just that – ours. Through their participation, volunteers gained interest in the Wabash River, pride in their accomplishments, and a sense of ownership of the plan**.**

- It is hard to get people interested in being a member of the steering committee – try to keep meetings short and to the point because people don't want to spend a lot of time for committees

About Watershed Planning

- There were few specific guidelines that existed regarding what material to include and how to include it. There was variability within sections of the plan – some demanded great specificity while others were acceptable with general summaries. There were some topics that could be assumed by the reader and what could not. A diverse audience created problems with language and what data to include. Instead of following the format of other watershed management plans and their lack of or large amount of detail and assuming what was acceptable, following the IDEM guidelines is beneficial to avoid any unclear areas.
- The steering committee consisted of individuals with diverse backgrounds, recreational, and agricultural interests. However, there was a lack of geographical representation – most of the interest and focus were on the upper reaches of the watershed. It is important that the upper watershed issues be addressed when, in fact, it is the lower watershed that is affected by the land use practices that occur in the upper reaches.
- Our watershed area is both too big and too small. No matter which partner group or individual we talked with, they all wondered why their area of the Wabash River basin was not included in our planning process. Maintaining open dialogue with partners interested in improving water quality in areas where we are not currently working will help establish long-term planning efforts and improve all of our future activities.

About Programs

- The Rain Barrel Program, while extremely successful and popular, was administratively challenging. The storage and distribution of hundreds of barrels was cumbersome. Public interest in rain barrels is high; however, the high retail price limits adoption.
- A photographic monitoring program yielded valuable information and ensured that each project was visually monitored. It is advisable to take multiple photographs during baseline photo monitoring to ensure that several suitable photographs are available in case some shots are not reproducible. It was difficult to repeat photo monitoring during the project timeline for projects installed during the final year of the contract. Repeat photography will need to be completed after the completion of this project.
- Permits take time!

About Education/Outreach

- The community was unprepared due to lack of information prior to grant inception.
- Having a good contact person at the local newspaper would be very helpful to advertise workshops and events – trying to hold events without local newspaper support is very difficult

- Direct mailings have brought to light the challenges of media education efforts in our area. Unfortunately, we did not receive as much response from these expensive and time intensive media releases as we would have liked. Also, although awareness did increase in some areas related to water quality, these media releases did not show across the board increases in awareness from pre to post surveys. In the future, we would only consider doing direct mailings in conjunction with a partner to reduce costs and time as well as hopefully increasing the response rate from a partner with more experience.
- The project needs to be more publicly involved to keep momentum going throughout the grant cycle (other boards/committees and environmental groups as well as public events).
- We needed intense pre-marketing prior to implementation as well as coordination of critical areas with other funding programs in area (NRCS, FSA, F&W programs) The project should start promoting the possibility of 319 grant funds prior to any monetary approval, therefore building a potential funding database as well as building interest in the project in general. This will give the project a head start on the date of funding approval and information for any applications. Also, if the project can coordinate our funding areas with other critical areas hopefully we will reduce the competition for funds.
- It is difficult to get teachers to attend workshops due to school budgets. It may be easier to take a workshop or program to them (For example how to use an outdoor lab).
- Even in times of tight budgets, the Academy received the strongest response in numbers of applications received for the 2010 class, demonstrating that people are seeing that more education leads to more effective watershed management, and that the Academy is fulfilling the educational needs.

About Funding

- It is necessary to have sufficient resources in a project budget to accommodate investigation of potential projects.
- Acknowledgement of the importance of the sponsor having local funds ahead of time to carry disbursements until reimbursements are received was realized. Lack of funds was possibly due to the hard economic times and delayed reimbursements for task completion and paying the coordinator for work completed. A better understanding or clarification of financial obligations from the sponsor prior to or during the grant application process would have been beneficial as the sponsor depended on the state's reimbursement in a timely manner to carry out other educational and office duties outside of the project.
- Water monitoring funding has been an area where we have learned quite a few lessons. We have encountered issues with incorrect quotes and inflation increases. In the future, we will look at the start of a grant contract to the many water monitoring tasks to review costs and evaluate if these are still possible before the contract is executed.

Adaptive Management by IDEM

The following items were previously determined by IDEM Project Managers and/or other staff to need improvement or program/policy changes. These determinations were based on the communicated needs of and lessons learned from grant projects, and staff ideas about how to improve the Nonpoint Source Program. Following are the items and a status of their progress.

- Work more proactively with watershed groups on the development of watershed management plans to identify possible problems or roadblocks to success.
    - Complete (and ongoing) - The draft WMP submittal timeline has been revised, starting with the FFY 2008 grant agreements, to require more frequent draft submittals (and feedback from IDEM) to better guide the development process.
    - In process - IDEM hired Tetra Tech to create a TMDL Template that will meet the requirements of an approvable TMDL and meet most of the required 9 Minimum Elements of a Watershed Management Plan. The document contains recommendations on how a watershed group can add necessary information to meet the IDEM WMP Checklist. This document will be a good foundation for a group to start with when developing a WMP. This project will end on September 3, 2011.
- Update the existing website to better disseminate information on grants and nonpoint source pollution topics.
    - Complete – The revised and improved website is online and available at http://www.in.gov/idem/nps/.
- Create additional guidance on IDEM Section 319(h) program requirements, fundable activities, and policy that affects grant recipients.
    - Complete – Additional guidance is available on the new website (above).
- Establish a formal policy, requirements, and process for updating watershed management plans.
    - In process – draft policy is under development.
- Develop a comprehensive Monitoring Policy for planning and implementation projects.
    - In Process – the Water Quality Monitoring Strategy calls for IDEM to provide baseline monitoring for one year for certain planning projects. IDEM also has partnered with Purdue University to develop environmental indicators for showing improvement - see the "Working to Improve the Nonpoint Source Program" section of this report.
- Develop standardized Policy Documents and procedures for disseminating new policy decisions and clarifying gray areas.
    - In Process – Several policy documents have been developed. A procedure for disseminating new decisions needs to be finalized.

- Develop stronger relationships with IDEM permitting programs to ensure implementation activities detailed in grant agreements can obtain any needed permits.
    - Complete (and ongoing) - Nonpoint Source Program staff work closely with Wetlands and Stormwater staff to coordinate BMPs and needed permits, advise grantees on BMPs that will work with MS4 requirements, and direct grantees to BMPs that, where possible, can be installed without the need for permits.

- Work more closely with grant applicants during the application development process to ensure that potential grant recipients have adequate human resources to effectively manage Section 319(h) grant funds.
    - Complete (and ongoing) – Watershed Specialists have been working more closely with applicants to help ensure their proposals are feasible, will fulfill nonpoint source priorities, and will result in successful projects.

- Develop a monitoring guidance for watershed groups that includes environmental indicators that will be developed through the Environmental Indicators Project
    - In Process - A list of water quality parameters and their associated target values and recommended testing methods have been developed for the website. Additional guidance will be available upon the completion of the Environmental Indicators Project.

- Integrate the Section 319(h) program with other state and federal programs.
    - In process - The completion of the State Nonpoint Source Management Plan set the stage for more formal coordination between programs that impact nonpoint source pollution in Indiana. Before the 2013 Nonpoint Source Management Plan update, integration will be addressed with program partners.

- Build sustainable watershed groups that can continue to work on nonpoint source issues and not be reliant solely on Section 319(h) grant funds.
    - Complete (and ongoing) – the IDEM WSS developed and conducted three Watershed Networking Sessions last year which focused on watershed group funding and financial planning. IDEM is currently working with the Indiana Association of Soil and Water Conservation Districts to continue these efforts.

- Actively work to bring in information and lessons learned from other state Section 319(h) programs, as well as national workshops.
    - In process – IDEM started dialogue with the Ohio Nonpoint Source Program and plans to continue to meet with Ohio EPA to share ideas and coordinate programs when applicable. Staff attends national workshops on a regular basis and brings back pertinent information.

- Compliance/Enforcement - verification of installed BMPs and enforcement if necessary.

- In process – Staff visually checks BMPs as time allows, but a formal process is needed. IDEM is working on a policy and procedure for following up in situations where BMPs are not properly installed or maintained.

- Training on how to Calculate Load Reductions and use Models
  - In process – The completion of the online Load Duration Curve project, spearheaded by the TMDL Program, provides the basis for future load calculation work. The model is being bolstered with instructions and input from nonpoint source staff. Future modifications to the model to help it meet the needs of Nonpoint Source grantees are being planned.

- Improve Proposal Development Process
  - Ongoing – Staff have been considering ways to assist grantees in the development of good grant applications, such as holding a pre-grant application workshop.

- Improve 319(h) Proposal Review Process – to help ensure success of projects, measurable results, and meeting program goals. Clarify process to potential grantees.
  - In process – new application forms were finalized to help make the project's review process more focused and an internal set of procedures is in the early stages of development.

- Create a comprehensive list of 319 eligible BMPs to help 319(h) recipients when developing their cost-share program.
  - In process – a comprehensive list of 319(h) fundable BMPs has been developed and is in the final stages of completion. We are coordinating with NRCS on the development of this list.

- Research controlled drainage for field tiles and its feasibility to be promoted widely as a preferred BMP throughout the State.
  - Complete (and ongoing) – Purdue has researched controlled drainage and recommends it as a BMP. IDEM is working with Purdue to promote the practice statewide.

- Training for project managers in Conservation Planning.
  - In process - this should be available through the ICP Training and Certification Program that is being developed.

- Project accountability
  - In process - once the environmental indicators framework is finished, there will be improved coordination of efforts to produce Nonpoint Source Success Stories with WQ Assessments Success Stories and Measure W (SP-12) submissions

- Revise Cover Crop policy so it is more feasible for farmers to implement this BMP.
  - Complete – IDEM changed the policy to reduce the 5 year maintenance commitment to one year

For FFY 2012 IDEM plans to continue adaptive management in the following areas:

- Provide more guidance on how to determine critical areas for watershed planning
- Develop guidance for WMP revisions
- Determine criteria for which projects receive baseline monitoring from IDEM
- Determine criteria for projects that should receive follow-up monitoring for success

PARTNERS IN WATER QUALITY

The work that IDEM's many partners do to help assess and reduce nonpoint source pollution is a vital component of how Indiana addresses this environmental challenge. Increased communication and partnership building will help assure that these efforts are complementary and that resources available in Indiana are used in a manner that allows for maximum returns.

Natural Resources Conservation Service

The NRCS mission statement is "Helping People Help the Land." Through financial and technical assistance, NRCS works toward a landscape with productive agriculture and a high-quality environment. The guiding principles of NRCS work are service, partnership, and technical excellence. NRCS' primary customers are people who make decisions about natural resource use and management on non-federal land. This includes governments with a responsibility for natural resource use and management.

NRCS assists landowners in Indiana to develop conservation plans and provides technical assistance and advice about natural resource management. NRCS helps install conservation practices and systems that meet technical standards and specifications. NRCS also provides financial assistance through incentive programs, easement programs, grants, and stewardship payments. NRCS' standards and specifications are utilized for many of the cost-share practices implemented through 319(h) grants. NRCS Farm Bill conservation programs are utilized as one funding source for implementing local watershed management plans.

NRCS' strategic plan is focused on nonpoint source pollution issues in several areas. For example, some of the national goals for NRCS include "Clean & Abundant Water" and "High-Quality Productive Soils".

Indiana NRCS has spearheaded a partnership effort to conduct a statewide natural resources assessment broken down by 8-digit watersheds, following the national Rapid Watershed Assessment (RWA) framework. The RWAs are available on-line at: http://www.in.gov/isda/2732.htm . In 2011 NRCS is also completing a statewide natural resources inventory.

For Federal Fiscal Year 2010* (Oct. 1, 2009 through Sept. 30, 2010), NRCS programs in Indiana that support nonpoint source pollution efforts included:

Wildlife Habitat Incentive Program – Approximately $763,000 provided to landowners to develop and improve wildlife habitat on private lands.

Environmental Quality Incentive Program – Approximately $13.5 million provided to agriculture producers to implement structural and management conservation practices that optimize environmental benefits on working agricultural land.

Wetlands Reserve Program – Approximately $12.5 million provided to landowners to protect, restore, and enhance wetlands on their property.

Conservation Security Program – Provided $8.2 million to landowners to promote conservation on private working lands.

NRCS program funding by year, along with other conservation funding sources at the local and state levels, are available on the new Indiana Conservation Partnership reports website at http://www.in.gov/isda/icpreports/ .

*Final program numbers for FFY 2011 are not available until after October.

Indiana Association of Soil and Water Conservation Districts

The mission of the Indiana Association of Soil and Water Conservation Districts (IASWCD) is to represent Soil and Water Conservation Districts (SWCDs) as one voice, and to assist the leadership of local SWCDs through coordination and education for the wise use and management of our natural resources.

One of the many ways the IASWCD promotes the wise use of Indiana's natural resources is by providing information and outreach in support of statewide efforts to develop and enhance Indiana's watershed programs and help address nonpoint source pollution. Section 319 grant funds are used to staff a Conservation Development Specialist (CDS) position at the IASWCD that serves as a liaison with IDEM Office of Water Quality staff to help promote watershed management efforts.

Following are the accomplishments for the October 1, 2010-September 30, 2011 reporting period:

- The CDS role was implemented to assist local organizations (primarily Indiana Watershed Initiatives and Soil and Water Conservation Districts) with growth and organizational development.
- The position contributes significantly to the planning, implementation and promotion of the Watershed Networking Sessions, statewide events that are replicated regionally to maximize participation and contact between the Watershed Networking Sessions Project Team and local groups.
- Met regularly with IDEM Watershed Specialists and Watershed Planning and Restoration Section Chief for communication, reporting and planning purposes.
- Created and disseminated organizational and fund development information/tools and marketing materials to SWCDs and watershed groups.
- Developed and disseminated a monthly Development E-letter that highlights timely, applicable funding/grant opportunities and other resource development information.
- Served as a key contact for SWCDs via the IASWCD Weekly Update, communicating issues, events and resources in watershed management statewide. The Weekly Update serves as an excellent tool to acknowledge successful watershed practices through the Annual River Friendly Farmer Awards and the District Showcase Awards. The IASWCD Weekly Updates can be found on the IASWCD Web page, www.iaswcd.org. The IASWCD Web page serves as a direct link to the

"Watershed – Managing resources where soil & water meet," providing quick link access to Watershed Programs and Resources, including:

- Watershed Leadership Academy
- IDEM Watershed Specialists
- IDNR – Division of Water
  - Lake & River Enhancement
- ISDA – Clean Water Indiana
  - Conservation Reserve Enhancement Program
- NRCS Rapid Watershed Assessment
- Purdue University – Indiana Watershed Leadership Program
- Conservation Technology Information Center
  - Know Your Watershed

- Met with individual SWCDs, watershed groups, IDEM WSS team and ISDA Division of Soil Conservation staff to assess development needs and design and/or offer programming and materials relative to fund development, marketing and other general features that build capacity within the various conservation and watershed entities.
- A "Capacity Building Needs Assessment Survey" was developed and distributed to the 92 Indiana SWCDs and to 45 watershed groups, providing valuable information relative to current capacity of the entities and the need for organizational development.

Indiana State Department of Agriculture
Division of Soil Conservation / Indiana State Soil Conservation Board

The ISDA - Division of Soil Conservation works along with the State Soil Conservation Board to enhance the stewardship of Indiana's soil and water resources. This is done by providing face-to-face, on-the-land technical and financial assistance for implementing conservation practices, supporting Indiana's 92 Soil and Water Conservation Districts, and promoting the opportunities and benefits associated with caring for our soil and water resources.

The Division of Soil Conservation (Division)/State Soil Conservation Board (SSCB) employs Resource Specialists to directly assist landowners with the planning and implementation of conservation practices addressing specific soil and water resource concerns. Resource Specialists work in regional Conservation Implementation Teams (CIT) alongside staff from the Natural Resources Conservation Service (NRCS) and Soil and Water Conservation Districts (SWCD). The ISDA Resource Specialists assist with the planning, survey, design, and construction of thousands of practices annually. The common practices that these professionals work on include but are not limited to - filter strips, grassed waterways, forested and grassed buffers, water and sediment control basins, wetland restorations, and livestock watering systems.

The Division/SSCB also employs District Support Specialists, through the Clean Water Indiana Fund, to work directly with the local Soil and Water Conservation Districts (SWCD) to develop conservation priorities, goals, and plans for their respective territories. The District Support Specialists prepare and conduct trainings for SWCD supervisors and staff. They are also a resource for SWCDs in carrying out their legal and operational responsibilities.

Conservation Reserved Enhancement Program (CREP)

This program provides both state and federal incentives to landowners who are willing to install practices directly adjacent to eligible surface waters. This program is possible through an agreement between the State of Indiana and the United States Department of Agriculture. The program expanded in August 2010 from the original three watersheds--Pigeon-Highland, Tippecanoe, and Upper White River—to 11 watersheds. The expanded CREP area now includes Lower Wabash, Lower White, Lower East Fork White, Upper East Fork White, Middle Wabash-Busseron, Middle Wabash-Little Vermillion, Middle Wabash-Deer, and Upper Wabash Watersheds. The eleven targeted watersheds include 26,250 eligible acres. To date, over 6700 acres of conservation practices have been enrolled or installed along Indiana's rivers, lakes, and streams.

Clean Water Indiana

In 2011, $573,408 was awarded to 88 districts with projects related to education, marketing, cost share incentives for practices, and capacity building. Also in 2011, the State Soil Conservation Board (SSCB) awarded $84,000 CWI funds to five watershed-based projects. These multi-year, multi-district initiatives will provide cost share, incentives, demonstrations and/or direct professional assistance to land users.

The State Soil Conservation Board (SSCB) has voted to utilize over $600,000 of the Clean Water Indiana Grant Program funds to support competitive proposals for multi-district, multi-year watershed projects in 2012. Project funds will address at least two of the State priorities, as identified in the SSCB business plan adopted in 2010, including soil quality degradation, water quality impairments, and other soil and water related natural resources concerns.

In 2010 and 2011, the State Soil Conservation Board (SSCB) allotted CWI funds for the Conservation Cropping Systems Initiative (CCSI), along with NRCS. The intent of CCSI is to promote a systematic approach to production agriculture focusing on continuous no-till/strip-till, cover crops, precision farming, nutrient and pest management, and conservation buffers resulting in improved soil quality, water quality, and profitability on Indiana cropland. Through this program, agronomy professionals provide very specific education and technical assistance to agricultural producers and our partners directed at production efficiency and nutrient/sediment runoff reduction. In FFY 2011, 114 presentations were given to over 5,800 individuals and CCSI was present at events and/or provided technical assistance in over 56 counties

Indiana On-Farm Network

Participating farmers use precision agriculture tools and technologies to conduct research on their own farms. This concept is considered adaptive management and generally results in changes that increase profitability of the producer and ultimately has a positive impact on water quality. This program was developed to address key challenges in advancing water quality goals in the state related to production agriculture. The adaptive management process has shown most growers can reduce their nitrogen rates by one-third while maintaining or increasing profitability. ISDA currently has established 10 groups, each evaluating approximately 40 fields with tools such as: Corn Stalk Nitrate Testing, Aerial Imagery, and Replicated Strip Trials.

Indiana Department of Natural Resources, Division of Fish and Wildlife, Lake and River Enhancement Program

The legislation establishing the Lake and River Enhancement (LARE) program in IDNR's Division of Fish and Wildlife charges the Department with the responsibility to "Administer a lake and river enhancement program to do the following: (A) Control sediment and associated nutrient inflow into lakes and rivers, and (B) Accomplish actions that will forestall or reverse the impact of that inflow and enhance the continued use of Indiana's lakes and rivers." An amendment in the 2011 General Assembly added use of LARE funds to control invasive plants or animals, or removal of logjams or obstructions in rivers. Current efforts to define the policies, procedures, and guidelines of these new additions are ongoing as of June, 2011.

The importance of conserving natural resources, including wildlife, protecting the water quality of lakes and streams, and protecting high water quality resources is recognized. These goals are addressed with projects to protect and enhance aquatic habitat for fish and wildlife. The effort to insure the continued viability of Indiana's publicly accessible lakes and streams for multiple uses, including recreational opportunities, is crucial since funding comes directly from boat-owners in Indiana. A lake and river enhancement fee annually assessed by the Indiana Bureau of Motor Vehicles (BMV) is collected when boats are registered. These funds are used for the LARE program as well as IDNR Division of Law Enforcement for aquatic safety programs.

To accomplish the goals of the LARE program, grants have been made available for technical and financial assistance to various agencies and non-governmental entities (such as a lake or homeowner association) for qualifying projects since 1989. Projects to reduce the impact of soil erosion include the installation of grass cover, filter strips, and stream bank or shoreline stabilization structures to reduce sedimentation and nutrient runoff. In March of 2010, as the nationwide economic recession made its impact more fully felt in Indiana, LARE grants were restricted to addressing four projects. The projects were dedicated to eradication of invasive aquatic species: hydrilla in Lake Manitou; Starry Stonewort in Lakes Wawasee and George; and Parrot Feather in Meserve Lake. In July of 2010, new LARE grants were suspended indefinitely due to the state's continuing economic challenges, however, progress in ongoing projects continues throughout the state. The projects address issues of sediment removal, or consist of biological, diagnostic, design and construction projects on lakes and in lake watersheds throughout the state. Watershed Land Treatment projects involving land users in 16 Soil and Water Conservation Districts were completed in 2010-2011, or are continuing. These projects promote improved water quality and aquatic habitat, enhanced opportunities for boating, fishing, and other recreational pursuits, as well as providing increased economic value for businesses, communities, and individuals who live on or use these water bodies.

By state statute, a portion of LARE funds is to be used to control of invasive exotic aquatic species and sediment removal from publicly accessible lakes. Dredging projects provide immediate positive recreational and economic benefits to both users and residents of the affected water bodies through removal of legacy sediments after sources have been controlled, however no new projects were approved in March of 2011.

An improved economy allowed the LARE program to make project grant awards of $890,000 in August 2011. These projects include five watershed land treatment projects to reduce in-stream sediment and nutrients in HUCs 04050001, 04100003, 05120113, and 05120202.

Indiana State Revolving Fund Loan Program

The Indiana State Revolving Fund (SRF) Loan Program finances projects that abate or prevent nonpoint source pollution of Indiana's waters. The SRF Program has traditionally provided low interest loans to Indiana communities for projects that improve wastewater and drinking water infrastructure. The Program has been expanded to fund projects that meet the objectives in the Indiana Nonpoint Source Management Plan. The money loaned to these nonpoint source projects also is documented as match, when applicable, for the state Section 319(h) Grant Program. Eligible nonpoint source projects must provide water quality benefits to their respective communities and may include one or more of the following:

- Wetland restoration/protection;
- Erosion control measures;
- Ground water remediation;
- Storm water BMPs;
- Source water and wellhead protection;
- Brownfield Remediation;
- Conservation easements; and
- Agricultural and waste management BMPs.

This reporting period, the SRF Program loaned $11.4 million to six communities on projects to reduce nonpoint source pollution, primarily by extending sanitary sewers to areas with septic systems, thereby eliminating this potential source of pollution and through the remediation of brownfield sites. In this state fiscal year (7/1/2010 – 6/30/2011) 1,067 septic systems were eliminated, two brownfield sites and were remediated and one stormwater management project was completed. Throughout the life of the SRF Nonpoint Source Program, $179.5 million has been loaned for nonpoint source purposes and approximately 10,800 septic systems have been removed from service.

Indiana University School of Public and Environmental Affairs, Indiana Clean Lakes Program

The School of Public and Environmental Affairs (SPEA) at Indiana University has been working with IDEM through Section 319(h) funds to administer the Indiana Clean Lakes Program (CLP) since 1989. The Indiana CLP is a comprehensive, statewide public lake management program that includes public information and education, technical assistance, volunteer lake monitoring, and lake water quality assessment.

Indiana has over 1,400 lakes, reservoirs, and ponds. These waterbodies are one of the State's most precious natural resources. They provide drinking water, flood control, and a myriad of recreational

opportunities including boating, swimming, fishing, hunting, and wildlife viewing. However, Indiana's lakes are under pressure. Human activities such as poorly managed agriculture, suburbanization of lakeshores, boating impacts, and septic system discharges can result in excessive nutrient concentrations reaching lakes. This can lead to accelerated eutrophication and related undesirable effects including nuisance algae, excessive plant growth, murky water, odor, and fish kills.

Section 314 of the Clean Water Act charges IDEM with responsibility for monitoring, assessing, and reporting the trophic state and trends in trophic conditions of Indiana's lakes. Continued assessment of lake nutrient levels and effects, as begun by the State in the early 1970s, is needed in order to do the following: 1) report the status of lake eutrophication levels to the U.S. EPA (EPA) in the State's 305(b) water quality reports and 303(d) listing of impaired waterbodies; 2) ascertain and track any trends in lake eutrophication levels for State and EPA use; 3) collect any data needed to continue to develop State nutrient criteria, as mandated by EPA; and 4) collect data needed to determine if lakes and reservoirs are meeting state water quality standards.

Indiana's CLP, coordinated by IU-SPEA staff and students, includes the following components:

- Annual sampling of lakes and reservoirs to meet numbers 1 and 2 above;
- Training and support of a corps of volunteer lake monitors;
- Education and outreach through the production and distribution of the quarterly newsletter, *Water Column;* maintenance of a website (http://www.indiana.edu/~clp/index.html); preparation of brochures and fact sheets; and participation in the annual Indiana Lake Management Conference; and
- Providing technical assistance and expertise on lake-related issues within the State and elsewhere.

In 2008, IDEM developed a CWA Section 305(b) assessment methodology in an effort to more accurately characterize water quality in Indiana lakes. In order to develop the methodology, water quality data from more than 13,000 individual samples were reviewed. The majority of these data (70%) were collected under the Clean Lakes Volunteer Monitoring Program. In order to have sufficient data for development of the methodology, it was important to use the volunteer data, if its reliability could be verified. To do this, Limnotech, Inc., under contract to IDEM, compared the volunteer data with agency-collected data for several parameters to determine if a significant difference existed between the two data sets. These analyses showed that the data collected by the Clean Lakes Program volunteers are indistinguishable from agency data, and, therefore, no bias should exist if all datasets are combined. Data from the Clean Lakes Volunteer Monitoring Program was a critical component of the analysis from which IDEM developed its 305(b) assessment methodology. And, once the methodology was developed, IDEM was able to use volunteer data to make CWA 305(b) assessments of lake water quality for the first time in 2008.

IU-SPEA continues to collect lake data under a 319(h) grant that runs through 2011. In 2010 and 2011 data is being collected using a random sampling design (from a set of Indiana public lakes and reservoirs with boat access and a surface area greater than five (5) acres) as opposed to a targeted design which was used in the past. This change was made to provide a more statistically valid assessment of Indiana

lakes and reservoirs. By doing this, the biannual 305(b) report to EPA will more accurately reflect the status of Indiana's publicly-accessible lakes and reservoirs, without geographical bias.

The Indiana Clean Lakes Program plays an important role in the effort to reduce nonpoint source pollution in lakes and their tributaries. Educating watershed stakeholders and lake residents is the first step in changing behaviors that will reduce nonpoint source pollution. Through the CLP's education and outreach efforts, word is getting out about nonpoint source pollution and its effects on lakes. Lake assessment data are important because they can support lake management efforts by establishing the need for action. Temporal data may show important trends that can help identify problems as well as sources. Randomized lake water quality assessment data will better identify regional differences in geography, geology, topography, and land use throughout Indiana, which might affect the nature and magnitude of nonpoint source pollutants affecting the state's lakes and reservoirs. More lake associations and residents understand the importance of watershed management to protect and improve their lakes (reflected, in part, by the increased number of lake associations interested in watershed planning and 319(h) funding), and the Clean Lakes Program at IU-SPEA and the Nonpoint Source Program at IDEM are available to help them achieve their goals.

Indiana Lake Michigan Coastal Program

The purpose of the Indiana Lake Michigan Coastal Program (LMCP) is to enhance the state's role in planning for and managing natural and cultural resources in the coastal region and to support partnerships between federal, state and local agencies and organizations. The Indiana Department of Natural Resources is the lead agency implementing the LMCP and the program houses a full-time coastal nonpoint source (CNPS) coordinator .

The LMCP passes through approximately $650,000 annually through the Coastal Grants Program for projects to protect and restore natural, cultural, and historic resources in Indiana's Lake Michigan coastal region. Project categories include land acquisition (ex. riparian corridors), low cost construction (ex. natural area restoration), education and outreach, and planning/coordination/management (ex. land use planning and ordinances). The LMCP set the priorities for 2012 Coastal Grants based on the results of a public meeting. Priorities for funding are:

- **Low Cost Construction:** Wayfinding Signage to Public Lands
- **Acquisition:** Public Access Parks/Sites Along Creeks and Rivers
- **Planning/Coordination/Management:** Cultural/Historic Area Planning
- **Education / Outreach:** Shoreline/Beach Mgmt BMP Outreach to Landowners
- **Applied Research:** Land Restoration/Management Techniques
- **Emerging Issues:** Coastal Hydrology/Hydraulics

As part of the Coastal Zone Act Reauthorization Amendments of 1990 (CZARA), Congress created a stand-alone provision, Section 6217, which requires that states and territories with approved coastal zone management programs develop a coastal nonpoint source pollution control program to address water quality impairment of coastal waters. The purpose of the program is to develop and implement

management measures for nonpoint source pollution to restore and protect coastal waters. The DNR LMCP and IDEM Section 319(h) program work together in meeting the requirements of this program.

The LMCP submitted supporting documentation to the National Oceanic and Atmospheric Administration (NOAA) and EPA for the following Management Measures on March 26, 2010:

- New Development and Site Development;
- Watershed Protection and Existing Development;
- New and Operating Onsite Disposal Systems (OSDS);
- Planning, Siting, and Developing Roads and Highways;
- Siting, Designing, and Maintaining Bridges;
- Road, Highway, and Bridge Operation and Maintenance;
- Road, Highway, and Bridge Runoff Systems; and Hydromodification.

The NOAA and EPA reviewed the supporting materials and on June 24, 2010, and submitted findings to the state regarding these measures. The findings held that Indiana fully meets requirements for 9 of the 13 measures submitted and 2 others require minor additional supporting documentation.

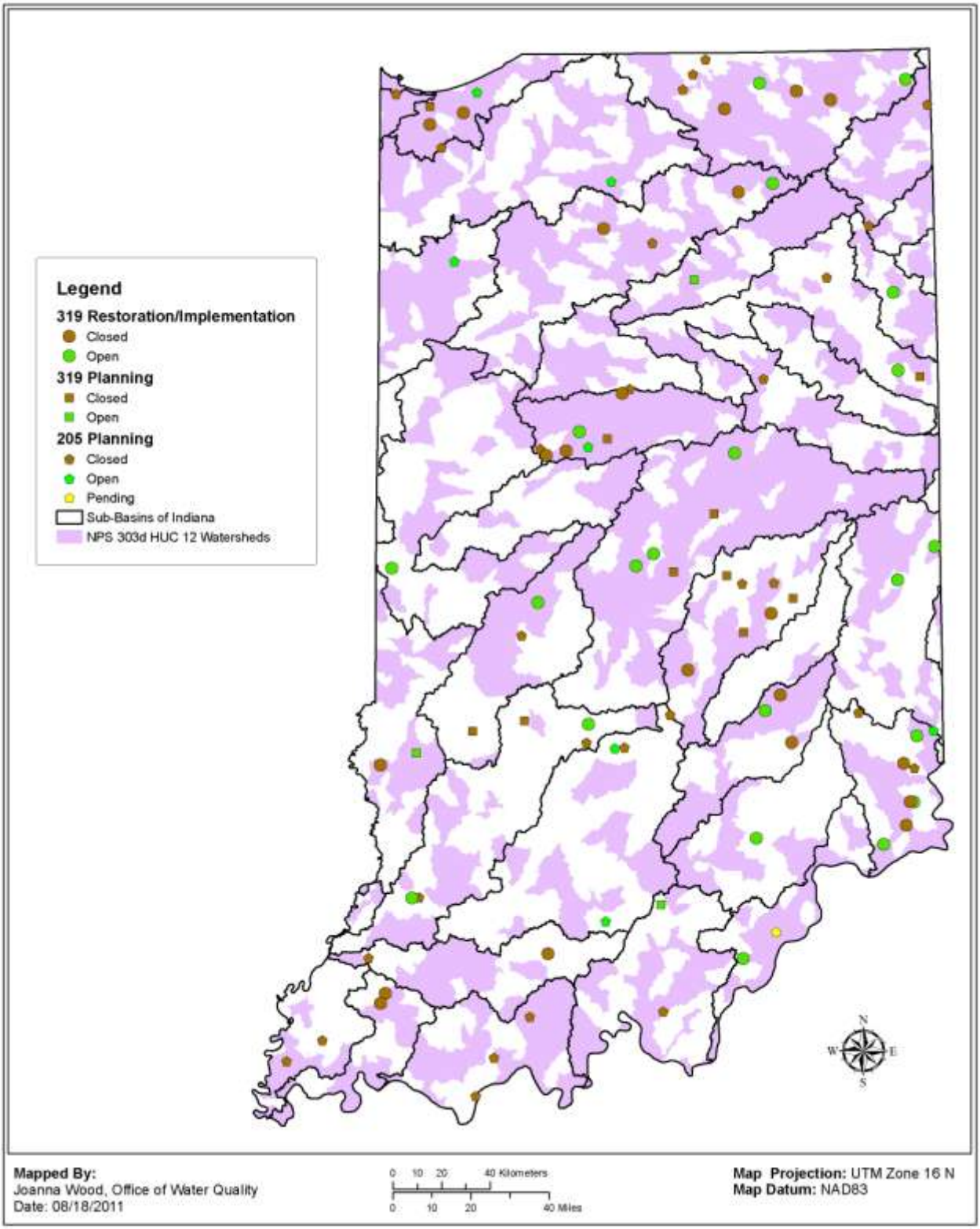
The LMCP manages the Indiana Clean Marina Program, a voluntary, incentive based program that encourages marinas and recreational boaters to implement environmentally sound practices to protect Indiana's inland and coastal waterways. In 2011, the LMCP designated its fourth marina, the Portage Public Marina. Since the program's inception in 2009 three other marinas have been designated officially as clean marinas –Hammond Marina, Trail Creek Marina, and Washington Park Marina. Several hundred bilge socks that absorb fuel and oil were purchased and are currently being distributed by the Coastal Nonpoint Program to boaters and marinas in addition to educational material distributed at several public events throughout the year.

The LMCP has partnered with the Indiana State Department of Health (ISDH) to develop an online septic system tracking database. The online database is modeled upon The Wastewater Information System Tool (TWIST) developed by the EPA. It allows the state and local health departments to effectively inventory and manage small wastewater treatment systems in their jurisdictions. Additionally, it is designed to track information related to homes and facilities served, permits, site evaluations, types of systems, inspections, and complaints. In 2010 the CNPS coordinator has coordinated with ISDH on Indiana's Network for Tracking of Onsite Sewage Systems (iTOSS) training for county health departments. The nonpoint source coordinator continues to work to provide county health departments grant funds for data entry/conversion. The creation of an onsite septic work group in 2011 will combine resources on a regional scale to determine the best approach to combating failing septic systems.

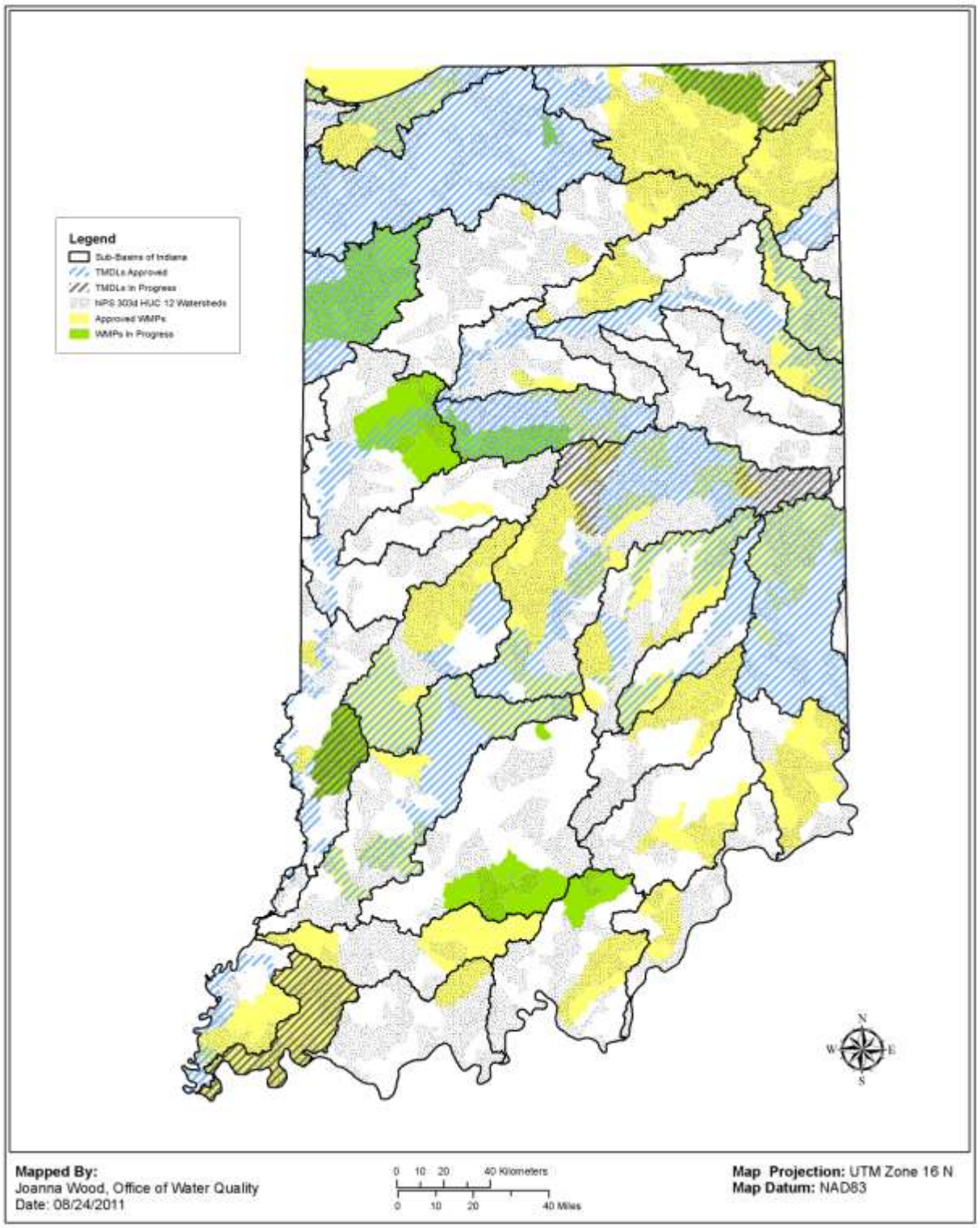
The Coastal Nonpoint Grants Program closed out several grants remaining from 2008 and 2009 federal funds specifically for the 6217 nonpoint source program. Projects that demonstrated implementation of action items listed in approved local watershed management plans and projects that build local capacity were given funding priority. As of 2009, the federal funding for this program no longer exists.

The CNPS coordinator continues to provide technical assistance in the form of watershed plan development, GIS analysis and mapmaking, grant application assistance, and environmental law interpretation within the Little Calumet-Galien River Watershed. Additionally the coordinator serves many regional committees from watershed planning to clean marinas.

APPENDIX A: Distribution of Nonpoint Source Projects



APPENDIX B: Watershed Planning/TMDL Activities and 303(d) Listed Waterbodies by Watershed Area



Appendix B illustrates the distribution of TMDL development activities over watershed planning activities. The grayed areas are representative of the watersheds that include at least one listing of a nonpoint source impaired water body. As evident by the areas with solid green or yellow and blue or gray stripes, these watersheds have receive much attention for their level of impairments and interest from local entities to improve water quality through comprehensive planning and subsequent implementation activities.

APPENDIX C: Open 319(h) Projects 9/1/10 – 8/31/11

FFY	ARN	Contractor	Project	Status	Start	End	Type	Project
2005								
	10-61	enfoTech and Consulting, Inc.	IDEM AIMS Upgrade	Closed	6/14/2010	6/13/2011	ProgramSupport	Joanna
	9-254	Indiana University	Indiana Clean Lakes Program	Open	8/5/2009	1/4/2012	Assessment	Laura
2006								
	10-18	Tippecanoe Environmental Lake &	Upper Tippecanoe/Grassy Creek Impl. (contract#2)	Closed	11/6/2009	10/5/2010	Restoration/Impl	Laura
	6-177	Elkhart River Restoration	Elkhart River WMP	Closed	11/22/2006	11/21/201	Restoration/Impl	Laura
	7-79	LaGrange County SWCD	LaGrange WQ Improvement	Closed	3/8/2007	3/31/2011	Restoration/Impl	Laura
	8-134	Purdue University	Strengthening Watershed Leaders' Capacity (IWLA)	Closed	7/31/2008	1/31/2011	ProgramSupport	Betty
	8-75	Save the Dunes Conservation Fund	Salt Creek Implementation Demonstration	Closed	3/13/2008	3/12/2011	Restoration/Impl	Joanna
2007								
	7-182	LaGrange County SWCD	Little Elkhart River WMP Update	Open	11/26/2007	11/25/201	Restoration/Impl	Laura
	7-183	Knox County SWCD	Kessinger Ditch WMP Implementation	Open	9/22/2007	9/21/2011	Restoration/Impl	Kathleen
	7-186	Purdue University	Development/Demo of Evaluation Framework	Open	7/14/2008	1/31/2012	ProgramSupport	Betty
	7-187	Sullivan County SWCD	Busseron Watershed Planning & Implementation	Open	12/12/2007	12/11/201	Planning	Laura
	8-131	Henry County SWCD	Big Blue River WMP	Closed	7/15/2008	1/14/2011	Planning	Leanne
	8-54	Clinton County SWCD	SF Wildcat Creek/Blinn Ditch/Kilmore Ck	Open	6/1/2008	8/31/2011	Restoration/Impl	Betty
	8-55	Vermillion County SWCD	Little Vermillion Watershed Project	Open	5/1/2008	10/31/201	Restoration/Impl	Leanne
	8-56	Wayne County SWCD	Whitewater River Initiative	Open	2/22/2008	8/21/2011	Restoration/Impl	Leanne
	8-93	Dearborn County SWCD	Hogan Creek Watershed Project	Closed	3/28/2008	9/27/2010	Restoration/Impl	Leanne
	8-94	Rush County SWCD	Little Blue River Watershed Project	Closed	3/28/2008	9/27/2010	Restoration/Impl	Leanne
	8-97	Bartholomew County SWCD	EF White River/Clifty Creek	Closed	4/25/2008	4/24/2011	Restoration/Impl	Leanne
2008								
	1-64	Wabash River Enhancement Corp.	Region of the Great Bend of the Wabash Bridging	Open	5/12/2011	5/11/2012	Planning	Betty
	8-189	Save the Dunes Conservation Fund	Salt Creek Watershed Cost-Share & Outreach Program	Open	2/1/2009	1/31/2013	Restoration/Impl	Leanne
	8-190	Delaware Co. SWCD	White River Watershed Project	Open	12/11/2008	12/10/201	Restoration/Impl	Betty
	9-54	Wabash River Enhancement Corp.	Wabash River:Lafayette-West Lafayette Reach WMP	Closed	11/12/2008	5/11/2011	Planning	Betty
	9-56	Dearborn County SWCD	Tanners Creek Watershed Project	Open	8/26/2008	11/11/201	Restoration/Impl	Kathleen
	9-57	Historic Hoosier Hills	South Laughery Creek Watershed	Open	4/1/2009	1/31/2013	Restoration/Impl	Leanne
	9-89	Madison County SWCD	Little Duck & Lilly Creek Implementation Project	Open	10/27/2008	10/26/201	Restoration/Impl	Laura
	9-90	Manchester College	Middle Eel River Watershed Initiative	Open	1/1/2009	12/31/201	Planning	Leanne
	9-91	Historic Hoosier Hills	Indian Creek Watershed Project	Open	2/26/2009	2/25/2012	Restoration/Impl	Leanne
2009								
	10-1	Indiana University	Eagle Creek Watershed Implementation Project	Open	12/3/2009	12/2/2012	Restoration/Impl	Leanne

APPENDIX C: Open 319(h) Projects 9/1/10 – 8/31/11

FFY	ARN	Contractor	Project	Status	Start	End	Type	Project Manager
	10-26	Tetra Tech Environmental, Inc.	TMDL and 9 Key Elements of a WMP Template	Open	3/4/2010	9/3/2011	ProgramSupport	Leanne
	9-272	Tippecanoe Watershed Foundation	WQ Improvement in Upper Tippi/Grassy Creek	Open	8/27/2009	8/26/2012	Restoration/Impl	Leanne
	9-274	Allen County SWCD	St. Marys River WMP Implementation	Open	1/15/2010	1/14/2013	Restoration/Impl	Laura
	9-275	Steuben County SWCD	Pigeon Creek WMP Implementation Phase 2	Open	9/23/2009	9/22/2012	Restoration/Impl	Laura
	9-276	Monroe County SWCD	Bean Blossom Watershed Implementation Project	Open	11/3/2009	11/2/2012	Restoration/Impl	Leanne
	9-277	Historic Hoosier Hills	Central Muscatatuck Watershed Project	Open	8/27/2009	8/26/2012	Restoration/Impl	Leanne
	9-278	Putnam County SWCD	Big Walnut/Deer Creek Watershed Implementation	Open	8/27/2009	8/26/2012	Restoration/Impl	Leanne
	9-282	Upper Wabash River Basin	Wabash River Basin WMP Implementation	Open	8/28/2009	2/27/2013	Restoration/Impl	Betty
2010								
	10-64	Indiana Association of Soil and	Capacity Building & Public Support for Wtrshd Grps	Open	9/22/2010	9/21/2012	ProgramSupport	Laura
	10-65	St. Joseph River Watershed	Middle St. Joseph River WMP Development & Impl.	Open	9/27/2010	3/26/2014	Restoration/Impl	Laura
	10-66	Purdue University	Watershed Leadership Academy	Open	2/1/2011	1/31/2013	ProgramSupport	Betty
	10-80	Clark County SWCD	Silver Creek Watershed Improvement Project	Open	10/18/2010	1/17/2014	Restoration/Impl	Kathleen
	10-84	The Nature Conservancy	Two-Stage Ditch Outreach and Technology Transfer	Open	12/17/2010	12/16/201	Education	Laura
	10-85	Dearborn County SWCD	Hogan Creek Watershed Project	Open	11/16/2010	11/15/201	Restoration/Impl	Kathleen
	10-86	LaGrange County SWCD	Pigeon River WMP Development & Implementation	Open	9/28/2010	9/27/2014	Restoration/Impl	Laura
	10-87	White River RC&D, Inc.	Mill Creek - Blue River Watershed Project	Open	11/15/2010	2/14/2013	Planning	Kathleen
	1-2	Sullivan County SWCD	Busseron Creek Watershed Implementation	Open	11/24/2010	11/23/201	Restoration/Impl	Laura
	1-66	Indiana State Department of	Technical Assistance for Agriculture	Open	7/15/2011	7/14/2014	ProgramSupport	Laura

APPENDIX D: Open 205(j) Projects 9/1/10 – 8/31/11

FFY	ARN	Contractor	Project	Status	Start	End	Type	Project Manager
2007								
	1-45	U. S. Geological Survey	Assessment of Nutrients using Invertebrates &	Open	4/8/2011	4/7/2012	Assessment	Betty Ratcliff
	8-96	Upper White River Watershed Alliance	Water Quality Data Interpretation and	Closed	5/18/2009	5/17/2011	ProgramSupport	Joanna Wood
	9-180	Brown County SWCD	Yellowwood Stream Restoration Demo	Open	2/17/2009	7/30/2011	Planning	Laura Bieb
2009								
	10-27	Save the Dunes Conservation Fund	Salt Creek Integrated Pilot	Open	6/1/2010	2/28/2014	Planning	Leanne Whites
	9-271	Clinton County SWCD	S. F. Wildcat Creek WMP	Open	10/29/200	10/28/201	Planning	Betty Ratcliff
2009ARRA								
	10-19	Northern Indiana Regional Planning	Watershed Planning in NW IN	Open	2/3/2010	2/2/2012	Planning	Leanne Whites
	10-20	MACOG	Headwaters Stock Ditch/Pleasant, Riddles	Open	2/3/2010	2/2/2012	Planning	Laura Bieberic
	10-21	Ohio River Valley Water Sanitation	Lower Wabash R. Nutrients & Continuous	Open	2/3/2010	4/2/2012	Assessment	Betty Ratcliff
	10-23	Ohio-Kentucky-Indiana Regional	Dearborn Co. Water Quality Management Plan	Open	2/3/2010	8/2/2011	Planning	Kathleen Haga
2010								
	10-81	Jasper County SWCD	Upper Iroquois Watershed Initiative	Open	11/8/2010	8/7/2013	Planning	Leanne Whites
	10-83	Orange County SWCD	Lost River Watershed	Open	11/15/201	2/14/2013	Planning	Kathleen Haga

Appendix E: Project Summaries for Closed Section 319(h) Projects

FFY 2005

IDEM AIMS Upgrade (10-61) – enfoTech and Consulting, Inc. provided a one-year maintenance and upgrade package for the enhancement of features not previously scheduled in the development project. This ensures that all functionality is fully tested as new enhancements are incorporated into the Assessment Information Management System (AIMS) - the database system that houses the Indiana Nonpoint Source water quality and loadings data. During the planning for initial development, some concepts for improvements were not conceived due to the extensive overhaul of the AIMS system to accept nonpoint source data. The enhancements provide for more features and functionality improvements for all programs as well as maintenance of the main system during the enhancements development.

FFY 2006

Elkhart River Watershed Management Plan (6-177) - The Elkhart River Restoration Association, Inc. (ERRA) developed and implemented a watershed management plan for the Elkhart River watershed, Hydrologic Unit Codes (HUCs) 04050001170, 80, 90, 1200 and 1210. A steering committee of local stakeholders guided the development of the plan. A monitoring program was conducted to investigate water quality concerns in the watershed. The ERRA also conducted an outreach program to educate the public about the project including brochures, field days to promote best management practices, and installation of at least one agricultural and one urban BMP as demonstration sites for a field day.

Water Quality Improvement through BMPs – Paired Watershed Study (7-79) – The LaGrange County SWCD implemented a cost-share program to install best management practices (BMPs) in the St. Joseph River watershed, Hydrologic Unit Code (HUC) 04050001; focusing on the Bontrager Ditch/Emma Lake subwatershed, HUC 04050001140010. The cost-share program included the development of Comprehensive Nutrient Management Plans (CNMPs) and BMPs such as cattle exclusion fencing, alternative watering systems, buffer and filter strips, and others that address the water quality concerns outlined in the St. Joseph River or Little Elkhart River Watershed Management Plans. The District also conducted an intensive monitoring program within the Bontrager Ditch/Emma Lake subwatershed and the Bontrager Ditch-Hostetler Ditch subwatershed (HUC 04050001140020) to determine the effectiveness of the best management practices installed. The monitoring program was designed as a paired watershed study with the Bontrager Ditch/Emma Lake subwatershed designated as the treatment watershed and the Bontrager Ditch-Hostetler Ditch subwatershed designated as the control watershed. Public outreach activities also were conducted including newsletters, pasture walks, a field day, and water quality workshops.

Upper Tippecanoe/Grassy Creek Implementation (10-18) - The Tippecanoe Environmental Lake & Watershed Foundation (TELWF) implemented the Upper Tippecanoe River Watershed Management Plan by developing a cost-share program to install best management practices (BMPs) to reduce sediment, nutrient and *E. coli* loading in the Upper Tippecanoe Watershed, focusing on the Grassy Creek-Robinson Lake/Ridinger Lake (HUC 05120106010060), Elder Ditch (HUC 05120106010070), and Smalley Lake (HUC 05120106010030) subwatersheds. The TELWF also conducted public education and outreach activities, including a field day highlighting completed BMPs; education days addressing watershed issues such as land use, riparian zones, erosion control, nutrient management, and septic system issues/maintenance; newsletters, and a brochure on BMPs.

Appendix E: Project Summaries for Closed Section 319(h) Projects

Strengthening Watershed Leaders' Capacity (8-134) - Purdue University built on the initial success and broad partnerships of the Indiana Watershed Leadership Academy to sustain and enhance its efforts to serve the watershed and nonpoint source training needs of community-based water quality efforts. They recruited watershed leaders for three more offerings of the Watershed Leadership Academy course. The Academy combines the best of face-to-face training sessions with distance education. Graduates of the Academy are awarded a Professional Certificate in Watershed Management from Purdue University.

Salt Creek Implementation Demonstration (8-75) – Save the Dunes Conservation Fund (SDCF) supported the development and implementation of the Salt Creek Watershed Management Plan and ongoing efforts to improve water quality on a watershed basis by promoting CD/LID best management practices (BMPs) throughout the watershed. This project enabled SDCF and the Salt Creek watershed group to focus on critical issues within the watershed, expand on existing partnerships, and identify and implement projects that demonstrate storm water technologies and BMPs, including biofiltration practices, pervious pavement, and rain gardens. They also used information on design parameters and project implementation to encourage the incorporation of CD/LID into future planning and decision-making, and they established buy-in by increasing understanding of the value and purpose of these practices through regular watershed meetings and education and outreach efforts.

FFY 2007

Big Blue River WMP (8-131) - The Henry County SWCD produced a watershed management plan (WMP) for the Big Blue River watershed, Hydrologic Unit Code (HUC) 0512020401. The District conducted physical, chemical and biological monitoring program based on Hoosier Riverwatch methods in the watershed. Education and outreach activities were conducted to raise public awareness and participation in the Big Blue River Watershed Project including public meetings; Steering Committee meetings; press releases; stream clean-ups to improve aquatic habitat, create awareness and encourage public involvement in the project; newsletters; a field day to showcase existing best management practices (BMPs); and educational events targeted towards classrooms, services clubs, and the general public that cover topics such as septic systems, runoff sources, and water quality monitoring.

South Fork Wildcat Creek/Blinn Ditch/Kilmore Creek Project (8-54) – The Clinton County SWCD developed and implemented a cost-share program for best management practices (BMPs) such as conservation tillage, filter strips, riparian buffers, rain gardens, livestock exclusion, and others that address the natural resource concerns outlined in the South Fork Wildcat Creek-Blinn Ditch and Kilmore Creek-Boyle's Ditch Watershed Management Plan (WMP). The District also conducted an outreach program to educate the public about the project and encourage participation. This included information to the media, mailings to watershed landowners, a booth at each Clinton County Fair and SWCD Annual Meeting, field days, steering committee meetings, information on septic system maintenance, public meetings, and programs designed to educate students about water quality.

Whitewater River Initiative (8-56) – The Wayne County SWCD implemented a cost-share program for best management practices (BMPs) such as filter strips, livestock exclusion and others that address the natural resource concerns outlined in the Middle Fork of the East Fork of the Whitewater River Watershed Management Plan. The District also produced a watershed management plan (WMP) for the West Fork Whitewater River Watershed (Hydrologic Unit Code 05080003010; 05080003020; 05080003030). A West Fork Steering Committee was established and meetings were conducted to guide the development of watershed management plan. Education and outreach activities were

conducted to raise public awareness and participation in the Whitewater River Initiative Project including West Fork and East Fork workshops or field days about nonpoint source pollution and other related water quality topics, Middle Fork Reservoir Clean-ups, West Fork Clean-ups, brochures, public meetings, newsletters, and press releases. A physical, chemical and biological monitoring program also was conducted in both watersheds.

Hogan Creek Watershed Project (8-93) – The Dearborn County SWCD developed and implemented a cost-share program for best management practices (BMPs) such as filter strips, livestock exclusion and others that address the natural resource concerns outlined in the Hogan Creek Watershed Management Plan. The District also conducted education and outreach activities to raise public awareness and participation in the Hogan Creek Watershed Project including newsletters to watershed residents and/or news releases to the local media, field days, workshops, classroom presentations to educate primary school students about nonpoint source pollution reduction and water quality, presentations to update local groups and officials on the progress of the project, and meetings with the Hogan Creek Steering Committee.

Little Blue River Watershed Project (8-94) - The Rush County SWCD implemented the Little Blue River Watershed Management Plan by implementing a cost-share program for best management practices (BMPs) such as conservation tillage, cover crops, livestock exclusion, and others that address the natural resource concerns outlined in the Little Blue River Watershed Management Plan. Education and outreach activities were conducted to raise public awareness and participation in the Little Blue River Watershed Project including educational programs for youth organizations, brochures, field days or workshops to promote BMPs, a river clean-up, press releases, public meetings, and steering committee meetings. A physical, chemical and biological monitoring program was conducted to identify trends and estimate contaminant loads in the Little Blue River watershed.

East Fork White River Watershed Projects: Continued Implementation in Clifty Creek Watershed and Management Planning for the Hawcreek Watershed (8-97) - The Bartholomew County SWCD implemented a cost-share program for best management practices (BMPs) such as conservation tillage, nutrient and pesticide management, cover crops, livestock stream exclusion, rotational grazing and others that address the natural resource concerns outlined in the Clifty Creek Watershed Management Plan. The District also produced a watershed management plan (WMP) for the Haw Creek Watershed, Hydrologic Unit Code (HUC) 05120205060. Education and outreach activities were conducted to raise public awareness and participation in the East Fork White River Watershed Projects including Steering Committee meetings; public meetings; new and existing educational programs such as Ag Day, Water Quality Week, the CreekLab and the Outdoor Lab; education at venues such as schools and fairs; newsletters; news releases; and radio public service announcements. The District also conducted a chemical monitoring program in the Clifty Creek and Haw Creek watersheds.

<u>FFY 2008</u>

Wabash River: Lafayette –West Lafayette Reach WMP (9-54) – The Wabash River Enhancement Corporation (WREC) will produce a watershed management plan for the Middle Wabash-Little Vermillion Basin. During the planning process WREC will conduct an education and outreach program designed to bring about behavioral changes that will lead to reduced nonpoint source pollution in the watershed. They also will conduct an extensive water quality monitoring program to identify and target the most critical sources of pollution in the watershed, and a social behaviors monitoring program to

help with planning and future implementation efforts. A coordinator will meet with local leaders in the community to educate and influence policies to benefit water quality.

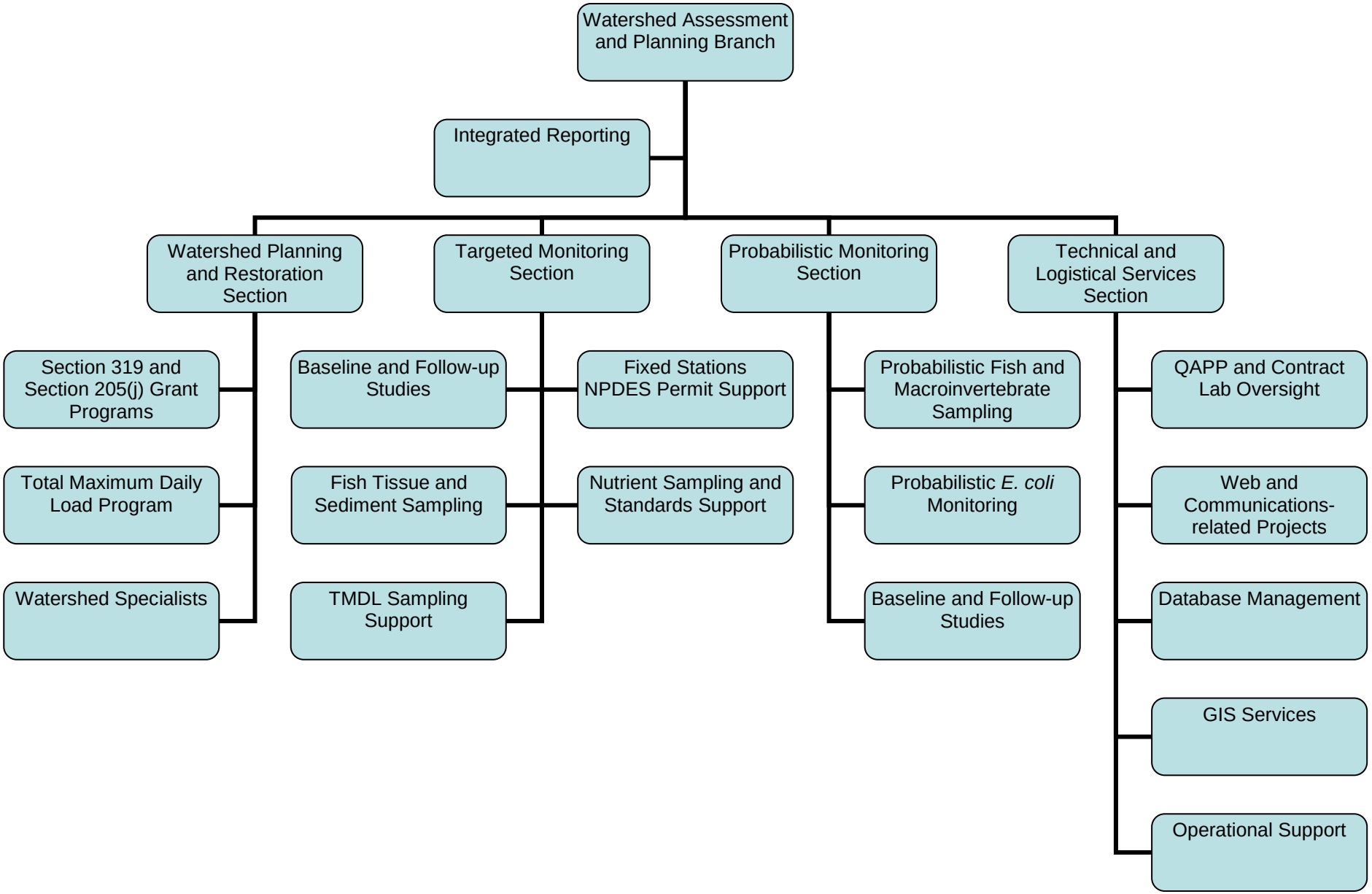
Appendix F: List of Attached Final Reports for Section 319(h) Projects

ARN	FFY	Project Name
10-61	2005	IDEM AIMS Upgrade
10-18	2006	Upper Tippecanoe/Grassy Creek Implementation
6-177	2006	Elkhart River WMP
7-79	2006	Water Quality Improvement through BMPs - Paired Watershed Study
8-134	2006	Strengthening Watershed Leaders' Capacity
8-75	2006	Salt Creek Implementation Demonstration
8-131	2007	Big Blue River WMP
8-93	2007	Hogan Creek Watershed Project
8-94	2007	Little Blue River Watershed Project
8-97	2007	EF White River/Clifty Creek Project
9-54	2008	Wabash River Lafayette-West Lafayette Reach WMP

The following projects have not been closed-out and the final report will be submitted when received:

8-54	2007	SF Wildcat Creek/Blinn Ditch/Kilmore Creek Implementation
8-56	2007	Whitewater River Initiative

Appendix G: Organization Chart for the Watershed Assessment and Planning Branch



Attachment 1 – Summary Report on IDEM's 319(h) Program Accomplishments 2011

Indiana's FFY 2011 Nonpoint Source Program

Summary of Cumulative Environmental Benefits from Project Activities

Section 319(h) Nonpoint Source projects funded under the FFY 2011 grant cycle were highly successful in achieving important water quality benefits to Indiana's surface waters. The following is a summary of best management practices (BMPs) installed during these projects along with the associated estimated load reductions for sediment, phosphorus, and nitrogen as tracked through the IDEM MS Access database:

Agricultural Management Practices

- Implemented 10 nitrogen reduction practices on approximately 3,257 acres of farmlands within targeted watersheds and 6 additional sites developed Comprehensive Nutrient Management Plan with 4 more sites incorporating Nutrient and/or Pest Management Plans/practices on 366 acres of production farmland. Also, established 6 Pasture and Hay Planting (512) areas on 294 acres. Installed more than 26,324 linear feet of Fencing (382) to exclude livestock from waterways, 1,180 feet of Pipeline (516), 6 Grade Stabilization Structures (410), 2,600 feet of Grassed Waterway (412), and 5 Water and Sediment Control Basins (638) with 3,190 additional feet of pipeline for the Subsurface Drain (606). Load reductions resulting from these practices totaled 14,246 tons/year of sediment, 16,380 lbs/year of phosphorus, and 33,903 lbs/year of nitrogen.

Water Quality and Riparian Zone Restoration

- 15 Heavy Use Area Protection (561) sites were completed including 4 Trough and Tank (614) structures, 1 Watering Facility, 4 Ponds (378), 2 Water Wells (642), 5 Underground Outlets, and 3 Stream Crossings for better management of livestock. Also, 7 acres of Filter Strip (393), 650 feet of Grassed Swales, 1 Structure for Water Control (587), and 600 feet of Stream bank and Shoreline Protection (580) were installed. Total load reductions from these practices came to 791 tons/year of sediment, 713 lbs/year of phosphorus, and 2,276 lbs/year of nitrogen.

Habitat Restoration

- Established 2 Critical Area Plantings (342) and 1 Tree and Shrub Establishment (612) planting of 11 acres for water quality and habitat restoration. Load Reductions resulting from these practices: 96 tons/year of sediment, 84 lbs/year of phosphorus, and 168 lbs/year of nitrogen.

Waste Management

- Successfully completed the installation of 13 Cover and Green Manure Crop (340) areas on 2,538 acres plus 2 Waste Storage Facilities (313) for 8,422 tons/year of sediment, 10,688 lbs/year of phosphorus, and 22,691 lbs/year of nitrogen load reductions. Also, in urban

areas 8 Rain Barrels, 5 Rain Gardens on a total of 3,914 square feet, 2 Porous Pavement practices on 2,650 square feet, and 3 Roof Runoff Management (558) systems were installed. The total load reduction estimated from these urban practices came to 90 lbs/year of phosphorus, and 443 lbs/year of nitrogen. No negligible sediment reductions were recorded from the urban practices.

ANNUAL LOAD REDUCTION SUMMARY

Total FFY 2011 Pollutant Load Reductions

Reduced Sediment loadings by 23,580 tons/year

Reduced Phosphorus loadings by 27,978 pounds/year

Reduced Nitrogen loadings by 59,530 pounds/year

Project Name	Sediment	Phosphorus	Nitrogen
Big Walnut Creek/Deer Creek WMP Implementation	3,580	3,944	7,893
Eagle Creek Watershed Implementation	13,564	17,061	34,104
East Fork White River/Clifty Creek Project	136	140	281
Indian Creek Watershed Project	2,331	2,185	4,371
Little Elkhart River WMP Update & Implementation	140	492	2,507
Middle Eel River Watershed Initiative	674	947	3,058
Pigeon Creek Implementation Phase II	1,895	1,756	3,508
St. Mary's Implementation Project	209	282	563
South Laughery Creek Watershed Implementation	637	249	499
Whitewater River Initiative	199	284	564

This table shows some of the larger load reductions by project.

Total from Project BMPs installed during FFY 2002 through FFY 2010

Sediment load reduction calculations: 201,260 tons/year

Phosphorus load reduction calculations: 337,230 pounds/year

Nitrogen load reduction calculations: 570,500 pounds/year

Watershed Planning through Section 319 and 205(j) Funding

In FFY 2011, the Nonpoint Source Program successfully completed six watershed management plans. To date, there have been 38 plans implemented of which five began implementation in FFY 2011.